

**UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
AUSTIN DIVISION**

FREE SPEECH COALITION, INC., et al.,

Plaintiffs,

v.

ANGELA COLMENERO, In Her Official
Capacity As Interim Attorney General For
The State Of Texas

Defendant.

CASE NO. 1:23-cv-00917-DAE

REBUTTAL DECLARATION OF SCOTT COLE IN SUPPORT OF PLAINTIFFS'
MOTION FOR EXPEDITED PRELIMINARY INJUNCTION

I, Scott Cole, declare as follows:

1. I am a partner at Quinn Emanuel Urquhart & Sullivan, LLP, counsel of record for Plaintiffs. I have personal knowledge of the facts in this declaration and, if called upon to do so, could and would testify competently as to the matters set forth herein.

2. Attached hereto as **Exhibit 1** is a true and correct copy of the House Committee Report for the Act of June 12, 2023, Ch. 676 (H.B. 1181) Tex. Sess. Law Serv. (“the Act”).

3. Attached hereto as **Exhibit 2** is a true and correct copy of the House Engrossed Report for the Act.

4. Attached hereto as **Exhibit 3** is a true and correct copy of the Senate Committee Report for the Act.

5. Attached hereto as **Exhibit 4** is a true and correct copy of the Senate Amendments for the Act.

6. Attached hereto as **Exhibit 5** is a true and correct copy of the article McDowell & Tiidenberg, “The (not so) secret governors of the internet: Morality policing and platform politics,” CONVERGENCE: THE INTERNATIONAL JOURNAL OF RESEARCH INTO NEW MEDIA TECHNOLOGIES at (August 4, 2023).

7. Attached hereto as **Exhibit 6** is a true and correct copy of the article Przybylski & Nash, “Internet Filtering and Adolescent Exposure to Online Sexual Material,” 21 CYBERPSYCH, BEHAV., AND SOC. NETWORKING 405 (2018).

8. Attached hereto as **Exhibit 7** is a true and correct copy of the article Fernandez, D., et al., “Effects of a 7-Day Pornography Abstinence Period on Withdrawal-Related Symptoms in Regular Pornography Users: A Randomized Controlled Study,” ARCHIVES OF SEXUAL BEHAVIOR (January 18, 2023) (researching “addiction” approach to pornography).

9. Attached hereto as **Exhibit 8** is a true and correct copy of the article Horvath, M. et al., “‘Basically... porn is everywhere,’ A Rapid Evidence Assessment on the Effects that Access and Exposure to Pornography has on Children and Young People,” PROJECT REPORT, OFFICE OF THE CHILDREN'S COMMISSIONER FOR ENGLAND, LONDON, UNITED KINGDOM

(2013) (addressing accessibility of pornography).

10. Attached hereto as **Exhibit 9** is a true and correct copy of the article Burke, Miller & MacPhee, “Constructing Pornography Addiction’s Harms in Science, News Media, and Politics,” 99:3 SOCIAL FORCES 1334-62 (March 2021) (researching “addiction” approach).

11. Attached hereto as **Exhibit 10** is a true and correct copy of the article Hald GM, Malamuth NM, “Self-Perceived Effects of Pornography Consumption,” 37(4) ARCHIVES OF SEXUAL BEHAVIOR 614-25 (2008) (addressing potential positive effects of pornography)

12. Attached hereto as **Exhibit 11** is a true and correct copy of the article Ley, Prouse & Finn, “The Emperor Has No Clothes: A Review of the ‘Pornography Addiction’ Model,” 6 CURR SEX HEALTH REP 94-105 (2014) (overview of “addiction” approach to pornography).

13. Attached hereto as **Exhibit 12** is a true and correct copy of the article Monto & Milrod, “Ordinary or Peculiar Men? Comparing the Customers of Prostitutes With a Nationally Representative Sample of Men,” 58(7) INT’L J. OF OFFENDER THERAPY AND COMPARATIVE CRIMINOLOGY 802-20 (2014) (addressing prostitution solicitation vs. pornography consumption).

14. Attached hereto as **Exhibit 13** is a true and correct copy of the article Hesse & Pedersen, “Porn Sex Versus Real Sex: How Sexually Explicit Material Shapes Our Understanding of Sexual Anatomy, Physiology, and Behaviour, 21 SEXUALITY & CULTURE 754-75 (Feb. 6, 2017) (addressing potential positive effects of pornography).

15. Attached hereto as **Exhibit 14** is a true and correct copy of the article McKee A., “The Positive and Negative Effects of Pornography as Attributed by Consumers,” 34(1) AUST J COMMU. 87-104 (2007) (addressing potential positive effects of pornography).

16. Attached hereto as **Exhibit 15** is a true and correct copy of the article Prause & Siegle,, “Sex film viewing, but not hypersexual concerns, are associated with more sexual arousal in anticipation of an intimate partner experience,” 19(2) SEX HEALTH 79-91 (2022) (addressing “addiction” approach).

17. Attached hereto as **Exhibit 16** is a true and correct copy of the article Reid,

Carpenter & Fong, “Neuroscience research fails to support claims that excessive pornography consumption causes brain damage,” 2 SURG NEUROL INT 64 (2011) (addressing claims of possible adverse effects of pornography).

18. Attached hereto as **Exhibit 17** is a true and correct copy of excerpts of Emily Rothman, PORNOGRAPHY AND PUBLIC HEALTH (2019) (citing 2013 Growing Up with Media Study of sexual content on viewed content which collected data from 1,058 youth 14-21 years old found that 32% of youth reported that almost 100% of the television shows they watched contain sexual content, compared to 5% of the websites the youth visited).

19. Attached hereto as **Exhibit 18** is a true and correct copy of the article Seto, Cantor, & Blanchard, “Child Pornography Offenses are a Valid Diagnostic Indicator of Pedophilia,” 115 J. ABNORMAL PSYCHOLOGY 610 (2006) (addressing child pornography and Pedophilic Disorder).

20. Attached hereto as **Exhibit 19** is a true and correct copy of the article Shor & Seida, “Harder and Harder? Is Mainstream Pornography Becoming Increasingly Violent and do Viewers Prefer Violent Content?” JOURNAL OF SEX RESEARCH (2018) (analysis of ten years to evaluate any changes of aggressiveness over time).

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21. Attached hereto as **Exhibit 20** is a true and correct copy of the article Jeremy N. Thomas, “The development and deployment of the idea of pornography addiction within American Evangelicalism,” 23 SEXUAL ADDICTION & COMPULSIVITY 201-14 (2016) (addressing claims that pornography has gotten more extreme).

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on August 21, 2023 in Austin, Texas.

DATED: August 21, 2023

Respectfully Submitted,

By: /s/ Scott Cole

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EXHIBIT 1

BILL ANALYSIS

C.S.H.B. 1181
By: Shaheen
Judiciary & Civil Jurisprudence
Committee Report (Substituted)

BACKGROUND AND PURPOSE

Sexual material on websites has become increasingly accessible to a young demographic of users. Exposure to this material can be associated with many negative emotional, psychological, and physical health outcomes for preadolescent users. According to an analysis published in the *Journal of Adolescent Health*, approximately one in five youth experience unwanted online exposure to sexually explicit material. Some studies, such as a 2015 study by Zachary D. Bloom and W. Bryce Hagedorn, have noted several potential negative impacts stemming from certain adolescents' use of sexually explicit material. C.S.H.B. 1181 seeks to hold individuals and entities who publish sexual material harmful to minors on a website accountable by setting out age verification requirements and creating liability for those who violate certain requirements.

CRIMINAL JUSTICE IMPACT

It is the committee's opinion that this bill does not expressly create a criminal offense, increase the punishment for an existing criminal offense or category of offenses, or change the eligibility of a person for community supervision, parole, or mandatory supervision.

RULEMAKING AUTHORITY

It is the committee's opinion that this bill does not expressly grant any additional rulemaking authority to a state officer, department, agency, or institution.

ANALYSIS

C.S.H.B. 1181 amends the Civil Practice and Remedies Code to require a commercial entity, including a corporation, limited liability company, partnership, limited partnership, sole proprietorship, or other legally recognized business entity, that knowingly and intentionally publishes or distributes material on a website, including a social media platform, more than one-third of which is sexual material harmful to minors, to use reasonable age verification methods to verify that an individual attempting to access the material is 18 years of age or older. The bill makes liable a commercial entity that knowingly and intentionally publishes or distributes material on a website that is found to have violated the bill's age verification requirement to the parent or guardian of the minor for damages resulting from a minor's access to the material, including court costs and reasonable attorney's fees as ordered by the court.

C.S.H.B. 1181 requires a commercial entity that knowingly and intentionally publishes or distributes material on a website or a third party that performs age verification to require an individual to provide digital identification stored on a digital network that may be accessed by a commercial entity and serves as proof of the identity of an individual or to comply with a commercial age verification system that verifies age using a government-issued identification or a commercially reasonable method that relies on public or private transactional data to verify the age of an individual. The bill prohibits the commercial entity or a third party that performs the age verification from retaining any identifying information of the individual after access has been granted to the material. The bill makes liable a commercial entity that knowingly and

intentionally publishes or distributed material on a website or a third party that performs the age verification that is found to have knowingly retained identifying information of an individual after access has been granted to the individual for damages resulting from retaining the identifying information, including court costs and reasonable attorney's fees as ordered by the court.

C.S.H.B. 1181 establishes the bill's provisions do not apply to a bona fide news or public interest broadcast, website video, report, or event and may not be construed to affect the rights of a news-gathering organization. The bill prohibits an Internet service provider, or its affiliates or subsidiaries, a search engine, or a cloud service provider from being held to have violated the bill's provisions solely for providing access or connection to or from a website or other information or content on the Internet or on a facility, system, or network not under that provider's control to the extent the provider or search engine is not responsible for the creation of the content that constitutes sexual material harmful to minors.

C.S.H.B. 1181 establishes that, for purposes of the bill's provisions, sexual material harmful to minors includes any material that:

- the average person, applying contemporary community standards, would find, taking the material as a whole and with respect to minors, is designed to appeal to or pander to the prurient interest;
- in a manner patently offensive with respect to minors, exploits, is devoted to, or principally consists of descriptions of actual, simulated, or animated display or depiction of:
 - a person's pubic hair, anus, or genitals or the nipple of the female breast;
 - touching, caressing, or fondling of nipples, breasts, buttocks, anuses, or genitals; or
 - sexual intercourse, masturbation, sodomy, bestiality, oral copulation, flagellation, excretory functions, exhibitions, or any other sexual act; and
- taken as a whole, lacks serious literary, artistic, political, or scientific value for minors.

The bill defines the following terms for purposes of the bill's provisions:

- "distribute" as issuing, selling, giving, providing, delivering, transferring, transmuting, circulating, or disseminating by any means;
- "minor" as an individual younger than 18 years of age;
- "publish" as communicating or making information available to another person or entity on a publicly available website; and
- "transactional data" as a sequence of information that documents an exchange, agreement, or transfer between an individual, commercial entity, or third party used for the purpose of satisfying a request or event and include records from mortgage, education, and employment entities.

The bill establishes that, for purposes of the bill's provisions, a news-gathering organization includes:

- an employee of a newspaper, news publication, or news source, printed or on an online or mobile platform, of current news and public interest, who is acting within the course and scope of that employment and can provide documentation of that employment with the newspaper, news publication, or news source; and
- an employee of a radio broadcast station, television broadcast station, cable television operator, or wire service who is acting within the course and scope of that employment and can provide documentation of that employment.

EFFECTIVE DATE

September 1, 2023.

COMPARISON OF INTRODUCED AND SUBSTITUTE

While C.S.H.B. 1181 may differ from the introduced in minor or nonsubstantive ways, the following summarizes the substantial differences between the introduced and committee substitute versions of the bill.

The substitute replaces the requirement from the introduced for an organization that owns a website, including an organization that owns a social media website, to include a mechanism that prevents a user from accessing pornographic material unless the user is 13 years of age or older with a requirement for a commercial entity that knowingly and intentionally publishes or distributes material on a website, including a social media platform, more than one-third of which is sexual material harmful to an individual younger than 18 years of age to use reasonable age verification methods to verify that an individual attempting to access the material is 18 years of age or older.

The substitute includes requirements for reasonable age verification methods, whereas the introduced did not include such requirements.

Whereas the requirement for preventing certain users from accessing pornographic material in the introduced applied to a corporation, limited or general partnership, limited liability company, business trust, real estate investment trust, joint venture, joint stock company, cooperative, association, bank, insurance company, credit union, savings and loan association, or other organization, regardless of whether the organization is for-profit, nonprofit, domestic, or foreign, the requirement for age verification in the substitute applies to a corporation, limited liability company, partnership, limited partnership, sole proprietorship, or other legally recognized business entity. Whereas the introduced included the term "pornographic material," defined as an image, video, or other means of visual display depicting actual or simulated sexual intercourse, deviate sexual intercourse, sexual bestiality, masturbation, sadomasochistic abuse, or lewd exhibition of the genitals, the anus, or any portion of the female breast below the top of the areola, the substitute omits this term. The substitute includes the term "sexual material harmful to minors," defined as any material that:

- the average person, applying contemporary community standards, would find, taking the material as a whole and with respect to minors, is designed to appeal to or pander to the prurient interest;
- in a manner patently offensive with respect to minors, exploits, is devoted to, or principally consists of descriptions of actual, simulated, or animated display or depiction of:
 - a person's pubic hair, anus, or genitals or the nipple of the female breast;
 - touching, caressing, or fondling of nipples, breasts, buttocks, anuses, or genitals;
 - or
 - sexual intercourse, masturbation, sodomy, bestiality, oral copulation, flagellation, excretory functions, exhibitions, or any other sexual act; and
- taken as a whole, lacks serious literary, artistic, political, or scientific value for minors.

This term does not appear in the introduced.

Whereas the introduced established that an applicable organization may be held liable for damages if the organization does not include the mechanism to prevent certain users from accessing pornographic materials, the substitute makes liable an applicable commercial entity that knowingly and intentionally publishes or distributes material on a website and is found to have violated the age verification requirement to the parent or guardian of the minor for damages resulting from a minor's access to the material, including court costs and reasonable attorney's fees as ordered by the court.

Whereas the introduced included a provision that established that a person who uploads pornographic material to a website may be held liable for damages if an individual younger than

13 years of age accesses the material on the website, the substitute does not include this provision.

The substitute includes the following provisions absent in the introduced:

- a prohibition against a commercial entity or a third party that performs the age verification retaining any identifying information of an individual after access has been granted;
- a provision making liable a commercial entity that knowingly and intentionally publishes material on a website or a third party that performs the age verification that is found to have knowingly retained identifying information to the applicable individual for damages, including court costs and reasonable attorney's fees as ordered by the court;
- a provision establishing that the bill's provisions do not apply to a bona fide news or public interest broadcast, website video, report, or event and may not be construed to affect the rights of a news-gathering organization; and
- a provision prohibiting an Internet service provider, or its affiliates or subsidiaries, a search engine, or a cloud service provider from being held to have violated the bill's provisions under certain conditions.

The substitute includes definitions of the following terms, which were absent in the introduced:

- "commercial entity";
- "digital identification";
- "distribute";
- "minor";
- "news-gathering organization";
- "publish"; and
- "transactional data."

The substitute omits the definition for "organization," which appeared in the introduced.

EXHIBIT 2

BILL ANALYSIS

Senate Research Center

H.B. 1181
By: Shaheen et al. (Paxton)
State Affairs
5/13/2023
Engrossed

AUTHOR'S / SPONSOR'S STATEMENT OF INTENT

Studies show the ease at which minors are able to access pornography is poorly controlled and allows exposure and exploitation of children online. Pornography is potentially biologically addictive, desensitizing brain reward circuits, increasing conditioned responses, and weakening brain function.

This legislation would ban minors under 18 years old from viewing explicit content online by requiring distributors and publishers of explicit content to require 18 years of age to view content. Commercial entities are held liable if they fail to perform age verification.

H.B. 1181 amends current law relating to restricting access to sexual material harmful to minors on an Internet website and provides a civil penalty.

RULEMAKING AUTHORITY

This bill does not expressly grant any additional rulemaking authority to a state officer, institution, or agency.

SECTION BY SECTION ANALYSIS

SECTION 1. Amends Title 6, Civil Practice and Remedies Code, by adding Chapter 129B, as follows:

CHAPTER 129B. LIABILITY FOR ALLOWING MINORS TO ACCESS PORNOGRAPHIC MATERIAL

Sec. 129B.001. DEFINITIONS. Defines "commercial entity," "distribute," "minor," "news-gathering organization," "publish," "sexual material harmful to minors," and "transactional data."

Sec. 129B.002. PUBLICATION OF MATERIAL HARMFUL TO MINORS. (a) Requires a commercial entity that knowingly and intentionally publishes or distributes material on an Internet website, including a social media platform, more than one-third of which is sexual material harmful to minors, to use reasonable age verification methods as described by Section 129B.003 to verify that an individual attempting to access the material is 18 years of age or older.

(b) Prohibits a commercial entity that performs the age verification required by Subsection (a) or a third party that performs the age verification required by Subsection (a) from retaining any identifying information of the individual.

Sec. 129B.003. REASONABLE AGE VERIFICATION METHODS. (a) Defines "digital identification."

(b) Requires a commercial entity that knowingly and intentionally publishes or distributes material on an Internet website or a third party that performs age verification under this chapter to require an individual to:

(1) provide digital identification; or

(2) comply with a commercial age verification system that verifies age using:

(A) government-issued identification; or

(B) a commercially reasonable method that relies on public or private transactional data to verify the age of an individual.

Sec. 129B.004. APPLICABILITY OF CHAPTER. (a) Provides that this chapter does not apply to a bona fide news or public interest broadcast, website video, report, or event and is prohibited from being construed to affect the rights of a news-gathering organization.

(b) Prohibits an Internet service provider, or its affiliates or subsidiaries, a search engine, or a cloud service provider from being held to have violated this chapter solely for providing access or connection to or from a website or other information or content on the Internet or on a facility, system, or network not under that provider's control, including transmission, downloading, intermediate storage, access software, or other services to the extent the provider or search engine is not responsible for the creation of the content that constitutes sexual material harmful to minors.

Sec. 129B.005. CIVIL PENALTY; INJUNCTION. (a) Authorizes the attorney general, if the attorney general believes that an entity is knowingly violating or has knowingly violated this chapter and the action is in the public interest, to bring an action in a Travis County district court or the district court in the county in which the principal place of business of the entity is located in this state to enjoin the violation, recover a civil penalty described by Subsection (b), and obtain other relief the court considers appropriate.

(b) Authorizes a civil penalty imposed under this section to be in an amount equal to not more than the total, if applicable, of:

(1) \$10,000 per day that the entity operates an Internet website in violation of the age verification requirements of this chapter;

(2) \$10,000 per instance when the entity retains identifying information in violation of Section 129B.002(b); and

(3) if, because of the entity's violation of the age verification requirements of this chapter, one or more minors accesses sexual material harmful to minors, an additional amount of not more than \$250,000.

(c) Requires that the amount of a civil penalty under this section be based on:

(1) the seriousness of the violation, including the nature, circumstances, extent, and gravity of the violation;

(2) the history of previous violations;

(3) the amount necessary to deter a future violation;

(4) the economic effect of a penalty on the entity on whom the penalty will be imposed;

(5) the entity's knowledge that the act constituted a violation of this chapter; and

(6) any other matter that justice may require.

SECTION 2. Effective date: September 1, 2023.

EXHIBIT 3

BILL ANALYSIS

Senate Research Center
88R30050 JES-D

C.S.H.B. 1181
By: Shaheen et al. (Paxton)
State Affairs
5/15/2023
Committee Report (Substituted)

AUTHOR'S / SPONSOR'S STATEMENT OF INTENT

H.B. 1181 passed the House unanimously and, as substituted, includes:

- S.B. 2021. Passed the Senate 31-0
- S.B. 417. Passed the Senate 29-2. This was revised with stakeholder input.

Problem to Solve:

- Protecting children from harm is a primary duty of a parent. Yet in this day and age, the devices they use contain readily available hardcore pornographic content and videos and pictures that harm the minds of children.
- Texas law prohibits exposing a minor to pornography in Section 43.24 of the Texas Penal Code—Relating to the "sale, distribution, or display of harmful material to a minor."
- According to The National Center on Child Exploitation, pornography is proven to be biologically addictive and research shows that adolescents are more susceptible than adults to addictions and there are developmental effects on the brain.
- Exposure to explicit content in childhood is proven to increase the demand for child pornography, child exploitation, human trafficking, and prostitution.
- Children who use pornography are more prone to engage in risky sexual behaviors and are at risk of sexual victimization, which leads to mental health disorders.
- Self-generated imagery now accounts for 1/3 of web pages featuring child pornography. Sexualization through devices is creating more demand, access, and content creation from minors.
- Children's development is harmed when viewing content from mainstream pornography websites that show sexual violence, incest, physical aggression, sexual assault, non-consent, and teens.

Bill Summary:

- This legislation would ban minors under 18 from viewing explicit content online by requiring distributors and publishers of explicit content to require 18+ commercially reasonable age verification in order to view content.
- Publishers and distributors of explicit content are held liable if they fail to perform age verification. Users' data is not retained after verification.

The Committee Substitute:

- The committee substitute adds language from S.B. 417 "Electronic Device Filters" chapter to the Business and Commerce Code. It requires manufacturers to enable an optional filter on electronic devices activated in Texas that blocks minors from accessing explicit material.
- The filter can be bypassed by the parent/guardian by entering a password or access code but must be reasonably secure.
- Manufacturers violating this chapter can be liable for a civil penalty of up to \$10,000 per violation or \$50 million total.
- Removes liability of nonparent violator.
- Adds the *Miller v. California* test to provide a good degree of specificity so that organizations may be put on adequate notice as to what is pornographic and what is not.

- Creates a more specific definition of filter including a good faith clause.
- Removes the private right of action.
- Makes the attorney general the enforcement mechanism.

C.S.H.B. 1181 amends current law relating to access to sexually explicit material on the Internet or electronic devices and provides civil penalties.

RULEMAKING AUTHORITY

This bill does not expressly grant any additional rulemaking authority to a state officer, institution, or agency.

SECTION BY SECTION ANALYSIS

SECTION 1. Amends Subtitle C, Title 5, Business and Commerce Code, by adding Chapter 121, as follows:

CHAPTER 121. ELECTRONIC DEVICE FILTERS

SUBCHAPTER A. ELECTRONIC DEVICE FILTER REQUIREMENTS

Sec. 121.001. DEFINITIONS. Defines "activate," "electronic device," "explicit material," "filter," "manufacturer," "minor," "simulated," and "visual material."

Sec. 121.002. APPLICABILITY. Provides that this chapter does not apply to a telecommunications provider who activates an electronic device on behalf of a user.

Sec. 121.003. ELECTRONIC DEVICE FILTER REQUIRED. (a) Requires a manufacturer to ensure that an electronic device activated in this state will, on activation, automatically enable a filter and notify the user of the device when the filter prevents the device from accessing, downloading, or displaying explicit material.

(b) Requires that an electronic device:

(1) allow the user of the device or a minor user's parent or guardian to circumvent the filter required under Subsection (a) by entering a password or access code; and

(2) reasonably prevent a user of the device from circumventing, modifying, removing, or uninstalling the filter without entering a password or access code.

Sec. 121.004. VIOLATION. (a) Provides that a manufacturer violates this chapter if the manufacturer releases into the market an electronic device that, when activated in this state, does not automatically enable a filter under Section 121.003 because the device lacks the necessary software or is defective.

(b) Provides that a manufacturer, notwithstanding Subsection (a), does not violate this chapter if the manufacturer makes a good faith effort to provide an electronic device that automatically enables a filter under Section 121.003.

SUBCHAPTER B. ENFORCEMENT

Sec. 121.051. CIVIL PENALTY; INJUNCTION. (a) Provides that a manufacturer who violates Section 121.004(a) is liable to this state for a civil penalty in the amount not to exceed the lesser of:

(1) \$10,000 for each violation; or

(2) \$50 million.

(b) Provides that a manufacturer who negligently violates Section 121.004(a) is liable to this state for a civil penalty in an amount not to exceed the lesser of:

(1) \$1,000 for each violation; or

(2) \$5 million.

(c) Authorizes the attorney general to bring an action in the name of the state to obtain an injunction preventing further violations of this chapter by a manufacturer or to recover a civil penalty under this section. Requires the prevailing party to recover reasonable and necessary attorney's fees and costs incurred in an action brought under this section.

(d) Authorizes the action to be brought in a district court in:

(1) Travis County; or

(2) the county located in which the defendant's principal place of business is located.

(e) Requires the attorney general to deposit a civil penalty collected under this section in the state treasury to the credit of the general revenue fund.

SECTION 2. Amends Title 6, Civil Practice and Remedies Code, by adding Chapter 129B, as follows:

CHAPTER 129B. LIABILITY FOR ALLOWING MINORS TO ACCESS PORNOGRAPHIC MATERIAL

Sec. 129B.001. DEFINITIONS. Defines "commercial entity," "distribute," "minor," "news-gathering organization," "publish," "sexual material harmful to minors," and "transactional data."

Sec. 129B.002. PUBLICATION OF MATERIAL HARMFUL TO MINORS. (a) Requires a commercial entity that knowingly and intentionally publishes or distributes material on an Internet website, including a social media platform, more than one-third of which is sexual material harmful to minors, to use reasonable age verification methods as described by Section 129B.003 to verify that an individual attempting to access the material is 18 years of age or older.

(b) Prohibits a commercial entity that performs the age verification required by Subsection (a) or a third party that performs the age verification required by Subsection (a) from retaining any identifying information of the individual.

Sec. 129B.003. REASONABLE AGE VERIFICATION METHODS. (a) Defines "digital identification."

(b) Requires a commercial entity that knowingly and intentionally publishes or distributes material on an Internet website or a third party that performs age verification under this chapter to require an individual to:

(1) provide digital identification; or

(2) comply with a commercial age verification system that verifies age using:

(A) government-issued identification; or

(B) a commercially reasonable method that relies on public or private transactional data to verify the age of an individual.

Sec. 129B.004. APPLICABILITY OF CHAPTER. (a) Provides that this chapter does not apply to a bona fide news or public interest broadcast, website video, report, or event and is prohibited from being construed to affect the rights of a news-gathering organization.

(b) Prohibits an Internet service provider, or its affiliates or subsidiaries, a search engine, or a cloud service provider from being held to have violated this chapter solely for providing access or connection to or from a website or other information or content on the Internet or on a facility, system, or network not under that provider's control, including transmission, downloading, intermediate storage, access software, or other services to the extent the provider or search engine is not responsible for the creation of the content that constitutes sexual material harmful to minors.

Sec. 129B.005. CIVIL PENALTY; INJUNCTION. (a) Authorizes the attorney general, if the attorney general believes that an entity is knowingly violating or has knowingly violated this chapter and the action is in the public interest, to bring an action in a Travis County district court or the district court in the county in which the principal place of business of the entity is located in this state to enjoin the violation, recover a civil penalty described by Subsection (b), and obtain other relief the court considers appropriate.

(b) Authorizes a civil penalty imposed under this section to be in an amount equal to not more than the total, if applicable, of:

(1) \$10,000 per day that the entity operates an Internet website in violation of the age verification requirements of this chapter;

(2) \$10,000 per instance when the entity retains identifying information in violation of Section 129B.002(b); and

(3) if, because of the entity's violation of the age verification requirements of this chapter, one or more minors accesses sexual material harmful to minors, an additional amount of not more than \$250,000.

(c) Requires that the amount of a civil penalty under this section be based on:

(1) the seriousness of the violation, including the nature, circumstances, extent, and gravity of the violation;

(2) the history of previous violations;

(3) the amount necessary to deter a future violation;

(4) the economic effect of a penalty on the entity on whom the penalty will be imposed;

(5) the entity's knowledge that the act constituted a violation of this chapter; and

(6) any other matter that justice may require

SECTION 3. Requires each manufacturer to implement a software update to automatically enable an electronic device filter on an electronic device activated in this state as required by Chapter 121, Business and Commerce Code, as added by this Act, not later than January 1, 2024.

SECTION 4. (a) Effective date, except as provided by Subsection (b): September 1, 2023.

(b) Effective date, Chapter 121, Business and Commerce Code, as added by this Act:
January 1, 2024.

EXHIBIT 4

House Bill 1181
Senate Amendments
Section-by-Section Analysis

HOUSE VERSION

SECTION 1. Title 6, Civil Practice and Remedies Code, is amended by adding Chapter 129B to read as follows:

CHAPTER 129B. LIABILITY FOR ALLOWING MINORS TO ACCESS PORNOGRAPHIC MATERIAL

Sec. 129B.001. DEFINITIONS. In this chapter:

(1) "Commercial entity" includes a corporation, limited liability company, partnership, limited partnership, sole proprietorship, or other legally recognized business entity.

(2) "Distribute" means to issue, sell, give, provide, deliver, transfer, transmute, circulate, or disseminate by any means.

(3) "Minor" means an individual younger than 18 years of age.

(4) "News-gathering organization" includes:

(A) an employee of a newspaper, news publication, or news source, printed or on an online or mobile platform, of current news and public interest, who is acting within the course and scope of that employment and can provide documentation of that employment with the newspaper, news publication, or news source; and

(B) an employee of a radio broadcast station, television broadcast station, cable television operator, or wire service who is acting within the course and scope of that employment and can provide documentation of that employment.

(5) "Publish" means to communicate or make information available to another person or entity on a publicly available Internet website.

(6) "Sexual material harmful to minors" includes any material that:

(A) the average person, applying contemporary community standards, would find, taking the material as a whole and

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(Unless otherwise indicated, all SECTIONS below are from FA1)

SECTION 1. Title 6, Civil Practice and Remedies Code, is amended by adding Chapter 129B to read as follows:

CHAPTER 129B. LIABILITY FOR ALLOWING MINORS TO ACCESS PORNOGRAPHIC MATERIAL

Sec. 129B.001. DEFINITIONS. In this chapter:

(1) "Commercial entity" includes a corporation, limited liability company, partnership, limited partnership, sole proprietorship, or other legally recognized business entity.

(2) "Distribute" means to issue, sell, give, provide, deliver, transfer, transmute, circulate, or disseminate by any means.

(3) "Minor" means an individual younger than 18 years of age.

(4) "News-gathering organization" includes:

(A) an employee of a newspaper, news publication, or news source, printed or on an online or mobile platform, of current news and public interest, who is acting within the course and scope of that employment and can provide documentation of that employment with the newspaper, news publication, or news source; and

(B) an employee of a radio broadcast station, television broadcast station, cable television operator, or wire service who is acting within the course and scope of that employment and can provide documentation of that employment.

(5) "Publish" means to communicate or make information available to another person or entity on a publicly available Internet website.

(6) "Sexual material harmful to minors" includes any material that:

(A) the average person applying contemporary community standards would find, taking the material as a whole and with

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with respect to minors, is designed to appeal to or pander to the prurient interest;

(B) in a manner patently offensive with respect to minors, exploits, is devoted to, or principally consists of descriptions of actual, simulated, or animated display or depiction of:

(i) a person's pubic hair, anus, or genitals or the nipple of the female breast;

(ii) touching, caressing, or fondling of nipples, breasts, buttocks, anuses, or genitals; or

(iii) sexual intercourse, masturbation, sodomy, bestiality, oral copulation, flagellation, excretory functions, exhibitions, or any other sexual act; and

(C) taken as a whole, lacks serious literary, artistic, political, or scientific value for minors.

(7) "Transactional data" means a sequence of information that documents an exchange, agreement, or transfer between an individual, commercial entity, or third party used for the purpose of satisfying a request or event. The term includes records from mortgage, education, and employment entities. Sec. 129B.002. PUBLICATION OF MATERIAL

HARMFUL TO MINORS. (a) A commercial entity that knowingly and intentionally publishes or distributes material on an Internet website, including a social media platform, more than one-third of which is sexual material harmful to minors, shall use reasonable age verification methods as described by Section 129B.003 to verify that an individual attempting to access the material is 18 years of age or older.

(b) A commercial entity that performs the age verification required by Subsection (a) or a third party that performs the age verification required by Subsection (a) may not retain any identifying information of the individual.

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(Unless otherwise indicated, all SECTIONS below are from FA1)

respect to minors, is designed to appeal to or pander to the prurient interest;

(B) in a manner patently offensive with respect to minors, exploits, is devoted to, or principally consists of descriptions of actual, simulated, or animated displays or depictions of:

(i) a person's pubic hair, anus, or genitals or the nipple of the female breast;

(ii) touching, caressing, or fondling of nipples, breasts, buttocks, anuses, or genitals; or

(iii) sexual intercourse, masturbation, sodomy, bestiality, oral copulation, flagellation, excretory functions, exhibitions, or any other sexual act; and

(C) taken as a whole, lacks serious literary, artistic, political, or scientific value for minors.

(7) "Transactional data" means a sequence of information that documents an exchange, agreement, or transfer between an individual, commercial entity, or third party used for the purpose of satisfying a request or event. The term includes records from mortgage, education, and employment entities. Sec. 129B.002. PUBLICATION OF MATERIAL

HARMFUL TO MINORS. (a) A commercial entity that knowingly and intentionally publishes or distributes material on an Internet website, including a social media platform, more than one-third of which is sexual material harmful to minors, shall use reasonable age verification methods as described by Section 129B.003 to verify that an individual attempting to access the material is 18 years of age or older.

(b) A commercial entity that performs the age verification required by Subsection (a) or a third party that performs the age verification required by Subsection (a) may not retain any identifying information of the individual.

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Sec. 129B.003. REASONABLE AGE VERIFICATION METHODS. (a) In this section, "digital identification" means information stored on a digital network that may be accessed by a commercial entity and that serves as proof of the identity of an individual.
(b) A commercial entity that knowingly and intentionally publishes or distributes material on an Internet website or a third party that performs age verification under this chapter shall require an individual to:
(1) provide digital identification; or
(2) comply with a commercial age verification system that verifies age using:
(A) government-issued identification; or
(B) a commercially reasonable method that relies on public or private transactional data to verify the age of an individual.

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(Unless otherwise indicated, all SECTIONS below are from FA1)

Sec. 129B.003. REASONABLE AGE VERIFICATION METHODS. (a) In this section, "digital identification" means information stored on a digital network that may be accessed by a commercial entity and that serves as proof of the identity of an individual.
(b) A commercial entity that knowingly and intentionally publishes or distributes material on an Internet website or a third party that performs age verification under this chapter shall require an individual to:
(1) provide digital identification; or
(2) comply with a commercial age verification system that verifies age using:
(A) government-issued identification; or
(B) a commercially reasonable method that relies on public or private transactional data to verify the age of an individual.

Sec. 129B.004. SEXUAL MATERIALS HEALTH WARNINGS. A commercial entity required to use reasonable age verification methods under Section 129B.002(a) shall:

(1) display the following notices on the landing page of the Internet website on which sexual material harmful to minors is published or distributed and all advertisements for that Internet website in 14-point font or larger:

"TEXAS HEALTH AND HUMAN SERVICES WARNING: Pornography is potentially biologically addictive, is proven to harm human brain development, desensitizes brain reward circuits, increases conditioned responses, and weakens brain function."

"TEXAS HEALTH AND HUMAN SERVICES WARNING: Exposure to this content is associated with low

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Sec. 129B.004. APPLICABILITY OF CHAPTER. (a) This chapter does not apply to a bona fide news or public interest broadcast, website video, report, or event and may not be construed to affect the rights of a news-gathering organization.

(b) An Internet service provider, or its affiliates or subsidiaries, a search engine, or a cloud service provider may not be held to have violated this chapter solely for providing access or connection to or from a website or other information or content on the Internet or on a facility, system, or network not under that provider's control, including transmission, downloading, intermediate storage, access software, or other services to the extent the provider

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self-esteem and body image, eating disorders, impaired brain development, and other emotional and mental illnesses."

"TEXAS HEALTH AND HUMAN SERVICES
WARNING: Pornography increases the demand for
prostitution, child exploitation, and child pornography."; and
(2) display the following notice at the bottom of every page
of the Internet website in 14-point font or larger:
"U.S. SUBSTANCE ABUSE AND MENTAL HEALTH
SERVICES ADMINISTRATION HELPLINE:
1-800-662-HELP (4357)
THIS HELPLINE IS A FREE, CONFIDENTIAL
INFORMATION SERVICE (IN ENGLISH OR SPANISH)
OPEN 24 HOURS PER DAY, FOR INDIVIDUALS AND
FAMILY MEMBERS FACING MENTAL HEALTH OR
SUBSTANCE USE DISORDERS. THE SERVICE
PROVIDES REFERRAL TO LOCAL TREATMENT
FACILITIES, SUPPORT GROUPS, AND COMMUNITY-
BASED ORGANIZATIONS."

Sec. 129B.005. APPLICABILITY OF CHAPTER. (a) This chapter does not apply to a bona fide news or public interest broadcast, website video, report, or event and may not be construed to affect the rights of a news-gathering organization.

(b) An Internet service provider, or its affiliates or subsidiaries, a search engine, or a cloud service provider may not be held to have violated this chapter solely for providing access or connection to or from a website or other information or content on the Internet or on a facility, system, or network not under that provider's control, including transmission, downloading, intermediate storage, access software, or other services to the extent the provider

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or search engine is not responsible for the creation of the content that constitutes sexual material harmful to minors.
Sec. 129B.005. CIVIL PENALTY; INJUNCTION. (a) If the attorney general believes that an entity is knowingly violating or has knowingly violated this chapter and the action is in the public interest, the attorney general may bring an action in a Travis County district court or the district court in the county in which the principal place of business of the entity is located in this state to enjoin the violation, recover a civil penalty described by Subsection (b), and obtain other relief the court considers appropriate.

(b) A civil penalty imposed under this section may be in an amount equal to not more than the total, if applicable, of:

(1) \$10,000 per day that the entity operates an Internet website in violation of the age verification requirements of this chapter;

(2) \$10,000 per instance when the entity retains identifying information in violation of Section 129B.002(b); and

(3) if, because of the entity's violation of the age verification requirements of this chapter, one or more minors accesses sexual material harmful to minors, an additional amount of not more than \$250,000.

(c) The amount of a civil penalty under this section shall be based on:

(1) the seriousness of the violation, including the nature, circumstances, extent, and gravity of the violation;

(2) the history of previous violations;

(3) the amount necessary to deter a future violation;

(4) the economic effect of a penalty on the entity on whom the penalty will be imposed;

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(Unless otherwise indicated, all SECTIONS below are from FA1)

or search engine is not responsible for the creation of the content that constitutes sexual material harmful to minors.
Sec. 129B.006. CIVIL PENALTY; INJUNCTION. (a) If the attorney general believes that an entity is knowingly violating or has knowingly violated this chapter and the action is in the public interest, the attorney general may bring an action in a Travis County district court or the district court in the county in which the principal place of business of the entity is located in this state to enjoin the violation, recover a civil penalty, and obtain other relief the court considers appropriate.

(b) A civil penalty imposed under this section for a violation of Section 129B.002 or 129B.003 may be in an amount equal to not more than the total, if applicable, of:

(1) \$10,000 per day that the entity operates an Internet website in violation of the age verification requirements of this chapter;

(2) \$10,000 per instance when the entity retains identifying information in violation of Section 129B.002(b); and

(3) if, because of the entity's violation of the age verification requirements of this chapter, one or more minors accesses sexual material harmful to minors, an additional amount of not more than \$250,000.

(c) The amount of a civil penalty under this section shall be based on:

(1) the seriousness of the violation, including the nature, circumstances, extent, and gravity of the violation;

(2) the history of previous violations;

(3) the amount necessary to deter a future violation;

(4) the economic effect of a penalty on the entity on whom the penalty will be imposed;

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(5) the entity's knowledge that the act constituted a violation of this chapter; and
(6) any other matter that justice may require.

SECTION 2. This Act takes effect September 1, 2023.

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(5) the entity's knowledge that the act constituted a violation of this chapter; and
(6) any other matter that justice may require.
(d) The attorney general may recover reasonable and necessary attorney's fees and costs incurred in an action under this section.

SECTION 2. Same as House version.

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EXHIBIT 5

Impact Factor: 2.85-Year Impact Factor: 2.9 Contents

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Abstract

A growing body of academic work on internet governance focuses on the ‘deplatforming of sex’, or the removal and suppression of sexual expression from the internet. Often, this is linked to the 2018 passing of FOSTA/SESTA – much-criticized twin bills that make internet intermediaries liable for content that promotes or facilitates prostitution or sex trafficking. We suggest analyzing both internet governance and the deplatforming of sex in conjunction with long-term agendas of conservative lobbying groups. Specifically, we combine media historiography, policy analysis, and thematic and discourse analysis of the National Center on Sexual Exploitation’s (NCOSE, formerly Morality in Media) press releases and media texts to show how conservative moral entrepreneurs weaponize ideas of morality, obscenity, and harm in internet governance. We illustrate how NCOSE has, directly and indirectly, interfered in internet governance, first by lobbying for rigorous enforcement of obscenity laws and then for creating internet-specific obscenity laws (which we argue CDA, COPA, and FOSTA/SESTA all were for NCOSE). We show how NCOSE adjusted their rhetoric to first link pornography to addiction and pedophilia and later to trafficking and exploitation; how they took advantage of the #metoo momentum; mastered legal language, and incorporated an explicit anti-internet stance.

Introduction/morality police on the internet

A growing body of academic work on internet governance focuses on what Stephen Moldrem (2006) aptly called the ‘deplatforming of sex’. Linked usually to the American Senate passing the Allow States and Victims to Fight Online Sex Trafficking Act and the Stop Enabling Sex Traffickers Act (FOSTA/SESTA) that permit holding internet intermediaries

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responsible for ‘promoting or facilitating prostitution’ or ‘knowingly assisting, facilitating or supporting sex trafficking’, the work on deplatforming of sex explores the banning, shadowbanning, demonetizing, and suppressing of sexual expression on a variety of platforms, most notably Tumblr and Craigslist since 2018 ([Lingel, 2021](#); [Pilipets and Paasonen, 2022](#); [Reynolds, 2021](#); [Tiidenberg, 2021](#)). Broadly, the consensus among internet researchers and sex work activists is that the vague wording of FOSTA/SESTA made censoring sexual expression the path of least resistance for platform companies ([Blunt et al., 2021](#); [Bronstein, 2021](#)). The law has thus harmed various communities (sex workers, LGBTQ+ internet users, artists, activists, sexual subcultural communities, academics studying them) in numerous ways ([Blunt and Wolf, 2020](#); [Engelberg and Needham, 2019](#); [Musto et al., 2021](#)). According to the US Government Accountability Office, FOSTA/SESTA has not been widely employed ([Goodwin et al., 2021](#)), and the bills’ effectiveness in fighting sex trafficking has been questioned to the point of reintroducing the SAFE SEX Workers Study Act in March 2022 (H.R.6928).

Yet, the deplatforming of sex is not new. Rather, we argue, it is part of a 60-year campaign against ‘obscenity’ by conservative lobbying groups like the National Center on Sexual Exploitation (NCOSE, formerly Morality in Media (MIM) between 1968 and 2015, and Operation Yorkville (OY) between 1962 and 1968),¹ who have for decades systematically targeted intermediaries (booksellers, libraries, postal mail, telephone companies, financial services, and more recently the internet broadly and specific platforms more narrowly) as the solution to what they frame as an ‘epidemic of obscenity’.

Outside of the FOSTA/SESTA related discussions, ‘deplatforming’ is a term primarily used to discuss content and community moderation, in particular, the power platform companies have to remove groups and individuals (e.g., Alex Jones or Milo Yiannopoulos) who engage in online hate speech and spread disinformation ([Rogers, 2020](#)). The term highlights the practical aspects of an actor being removed from a social media platform as well as points to losing their platform from which to speak and, thus, at least some of their power ([Tiidenberg and van der Nagel, 2020, p. 51](#)). Within the conversations around the deplatforming of sex, however, the focus lies more with the power of legislation, moral panics, and public opinion to incentivize platform companies to silence whole areas of discourse. We argue that NCOSE, in particular, has systematically attempted to deplatform sexual expression to control public discourse by centering it on the idea of harmful obscenity. To do this, they have interfered in internet governance in both direct and indirect ways that are important for internet scholars to understand.

In the following, we show how NCOSE acted as moral entrepreneurs, lobbying for the creation of obscenity legislation and its 'rigorous enforcement' in the United States. They worked toward the deplatforming of sexual expression initially in bookstores and later in cable and telecom channels and the internet. They undertook a decades-long crusade of inserting their language into multiple pieces of legislation crucial for internet governance: first, the Communication Decency Act (CDA), then the Child Online Protection Act (COPA), and finally, the already mentioned SESTA and FOSTA. We show how NCOSE adjusted their discourse to link pornography to addiction and pedophilia, and later, after failures of their preferred parts of CDA and the entirety of COPA, shifting from the anti-pornography rhetoric to the language of trafficking and exploitation, which eventually led to what they have celebrated as the victory in FOSTA/SESTA. While NCOSE in its various incarnations is not, by any means, wholly responsible for changes in internet policy, their archive of press releases, statements, and other documents represent a singular thread in which to investigate how the ideas of morality, obscenity, and harm have been weaponized for internet governance. This analysis demonstrates the importance of a longer-term view in internet governance scholarship. It helps determine relevant, albeit potentially surprising, stakeholders and to trace the trajectories of the discourses of riskiness and harm put forth by moral entrepreneurs. These may become a source of regulation put forth as justifiable decades later.

Panics, discourse, and moral entrepreneurs

For Stuart Hall (1985), an ideological struggle is part of the general social struggle for hegemony. Positions advocated for by NCOSE and other conservative lobbying groups, however, 'only become effective if they do, in the end, connect with a particular constellation of social forces' (Hall, 1986: p. 42). What we trace in our analysis, then, is not just a chronology of NCOSE's ideas and policies that shape platform governance but a conjuncture of forces that both exercise power and take advantage of contemporary moments. We argue that through Hall's (1988, p. 138) lens, NCOSE can be understood as an 'organized ideological force' that 'actively intervenes' in 'popular ideologies', in particular in times of crisis. Those crises, of course, can be amplified by those same organized ideological forces. Further concepts useful for our analysis, thus, are those of moral panics and moral entrepreneurs.

The notion of moral panic is most often attributed to Stanley Cohen (1972), whose work was also picked up by Stuart Hall. Hall, writing with co-authors of a 1970s nationwide panic about a mugging, suggested that moral panics are 'one of the key ideological forms in wh

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historical crisis is experienced and fought out' (Hall et al., 1978: p. 221). Distilling a definition from decades of earlier work, Goode and Ben-Yehuda describe moral panics as 'outbreaks of moral concern over a supposed threat from an agent of corruption that is out of proportion to its actual danger or potential harm' (2013, p. 26). They note that this 'concern' is expressed by various actors of moral panics, most importantly the media; the public; the politicians and lawmakers; and moral entrepreneurs. Moral entrepreneurs 'organize, recruit, proselytize, assemble, demonstrate, and lobby on behalf of their cause against the putative threat' (Goode and Ben-Yehuda, 2009: p. 67). Moral entrepreneurs define and combat perceived social threats by trying to shape 'public discourse, the law, and public policy' (Krinsky, 2013: p. 5). But it is when lawmakers and moral entrepreneurs join forces that they become capable of launching 'crusades, which occasionally turn into panics, to make sure that certain rules take hold and are enforced' (Goode and Ben-Yehuda, 2009: p. 67). This attention to moral entrepreneurs and how they partner up with other actors highlights that the formation of moral panics need not necessarily follow an organic path, but can be a result of manipulations not only driven by moral concerns, but also strategic ones (for analysis of economic interests and intra-industry competition that has driven moral panics see McKenna 2020, Petley 2011).

In this paper, we are particularly interested in how NCOSE – acting as a moral entrepreneur – attempts to shape law and public policy through both direct action as well as developing discourse about law and public policy. We explore the shifts within NCOSE's discourse, what they frame as the social threat, what they position as a solution, and who they construct as the main moralized subjects and objects. We define 'discourse' as 'a group of statements in any domain which provides a language for talking about a topic and a way of producing a particular kind of knowledge about that topic' (Hall, 1992: p. 292). Moral panics are fed by specific discourses and discursive strategies: one such is reliance on 'strong theory'. Paasonen et al. (2020, p. 46) note that strong theories 'offer and necessitate unambiguous results' and are 'firm in their premises and their commitment'. With 'strong theory', moral entrepreneurs 'know what needs to be proved' beforehand, and 'there is no possibility that a hypothesis will ever be disproved' because 'evidence that doesn't seem to support the hypothesis will be dismissed, ignored, or interpreted in such a way that it can be argued to support the hypothesis' (Paasonen et al., 2020: p. 47). Media-effects theories, in particular their earlier iterations like the 'magic bullet' or 'hypodermic needle,' which presume a linear transition from media content to altered persons or behavior, are one type of strong theory

popular among moral entrepreneurs, particularly those concerned with the intersection of media, technology, and sexual expression.

Topics pertaining to sexuality, in particular, 'come under the purview of the law when they become objects of social concern and political uproar. Each sex scare or morality campaign deposits new regulations as a kind of fossil record of its passage. The legal sediment is thickest – and sex law has its greatest potency – in areas involving obscenity, money, minors, and homosexuality' (Rubin, 1984, p. 158). Here, we rely on the notion of a 'trifecta of anxieties', suggested by Tiidenberg and van der Nagel. The trifecta is an assemblage of historical worries that moral panics around technology, media, and sex often build on and emerge out of. Technology and media panics center on anxiety regarding the impact of new technologies, media forms, and content on young people, who, based on the strong media-effects theory, are hapless, easily addicted, and in need of protection (Tiidenberg and van der Nagel, 2020). Sex panics, Tiidenberg and van der Nagel (2020, p. 32) argue, focus on 'anything from "unprecedented" sexualization of children to "epidemic levels" of abortion, teen pregnancies, masturbation, or sexually transmitted disease (STD) outbreaks, linking the above to pornography, homosexual men's behavior, or pedophiles in mystical and illogical ways'. The rhetoric of addiction is consistently centered in sex, technology, and media moral panics that call for restrictions of media or expression (cf Clarkson and Kopaczewski (2013) for a discussion of pornography addiction rhetoric and free speech; Szablewicz (2010) for a discussion of the strategic linking of internet addiction, pornographic and violent content and censoring the internet in China and Cover (2006) for an analysis of strategic use of gaming addiction discourses to propose censoring policies). These panics often overlap – technologies and media are linked to dangerous sexual behavior or addiction to pornography, and media panics often focus on pedophiles or the grooming of children for sex (Tiidenberg and van der Nagel, 2020). The concept of the 'trifecta of anxieties' invites questions at the intersection of sex and public life, public life and the internet, and the internet and sex, all of which are relevant for analyzing NCOSE discourses and their strategic deployment.

Methods

Our approach combines media historiography, policy analysis, and archival thematic and discourse analysis to explore the coverage of events between 1962 and 2022. We worked in a layered, iterative manner loosely following the tenets of 'conjunctural analysis' (Hall et al., 1978) as operationalized by Jamie Hakim (2019) – making sense of the conservative

governance lobby as a response to the specific mix of social contradictions that constitute the historical period (conjuncture) in which it has emerged. To do so, we started with the NCOSE website's archive of press releases ($n = 719$ between 1996 and 2022), the titles we analyzed for recurring rhetoric and thematic patterns. We supplemented this analysis with a meta-analysis of earlier press releases cited in academic papers and news sources for context (specifically academic papers in law journals on CDA, news coverage of OY and MIM, and various investigative obscenity-related committees). These two steps mapped out some of the temporal shifts of the NCOSE discourse. This was followed by a readthrough of the press releases, blog posts, and news articles on the NCOSE website for COPA ($n=11$, 1998–2009), CDA ($n=108$, 1998–2022), and FOSTA/SESTA ($n=76$, 2017–2022) for recurring themes (e.g., speakers, issues framed as problems, suggested solutions, actors framed as perpetrators, calls for action and tools/templates created for audiences to pressure legislators, etc.). Finally, we conducted a discourse analysis of 29 selected texts: all 11 texts on COPA and 18 on FOSTA/SESTA, with a focus on actors framed as perpetrators; the framing of the role of NCOSE; paraphrasing of legislation and its aims; tactics of legitimizing claims; rhetorical work done to classify and define problems, including rhetorical links created between pornography, the internet, child exploitation, sex trafficking, sex work; citation and appropriation of language from timely social campaigns, political events (presidential elections) and shifts within the platform ecosystem. In this analysis, we also identified moments of sensationalization, obfuscation (e.g., rhetorical bundling and ignoring complex arguments), and strategic misrepresentation of facts.

We start by discussing how in their early years, NCOSE framed some key legal cases, which reverberate through their campaign for decades to come, underpinning their strategy for deplatforming sex. We then continue by exploring three moments of active intervention into internet governance by NCOSE – their work around CDA, COPA, and SESTA/FOSTA. For the latter two, we also go into a more granular analysis of the rhetorical gymnastics undertaken across NCOSE's press materials to show how the moral entrepreneur moved from 'all porn is illegal', to 'porn creates child exploitation' within their COPA intervention and from there to a framing of sex trafficking, standing with survivors and against Big Tech in their SESTA/FOSTA intervention.

Early years, the beginnings of a strategy

To understand NCOSE as a moral entrepreneur (Goode and Ben-Yehuda, 2009), it is important to remember that while it was founded by three clergymen in 1962, the

organization has, from the very beginning, been shaped by lawyers and guided by a keen focus on influencing legislation. As Goode and Ben-Yehuda (2009) have argued, it is when moral entrepreneurs and lawmakers join forces that morals become rules and get enforced. From its inception, NCOSE focused on combating obscenity, initially via calls to 'rigorously enforce obscenity laws'. A closer look at how NCOSE framed some of the legal cases centered on refining the parameters of obscenity laws and testing the courts' willingness to uphold them allows us to trace the emergence of NCOSE's strategy for deplatforming sex.

In 1969, in Stanley v. Georgia, it was established that people could read and look at whatever they wished (including obscene materials) in the privacy of their own homes. Noting that the first and fourteenth amendments protected this privacy, Judge Thurgood Marshall argued that 'a State has no business telling a man, sitting alone in his own house, what books he may read or what films he may watch' (Stanley v. Georgia, 1969). This ruling upheld personal possession but also suggested that states wishing to regulate obscenity should focus on production and distribution, a direction that NCOSE incorporated into their strategy and has stayed true to until 2022.

In 1973 Miller v. California did convict a distributor of pornography under obscenity charges. Importantly for our analysis, this case established a three-part test for obscenity. According to the test, whether or not something is obscene depends on the following:

- (1) 'Whether the average person, applying contemporary community standards, would find that the work taken as a whole, appeals to the prurient interest;
- (2) whether the work depicts or describes, in a patently offensive way, sexual conduct specifically defined by the applicable state law;
- (3) and whether the work, taken as a whole, lacks serious literary, artistic, political, or scientific value' (Miller v. California, 1973).

This case pervades NCOSE rhetoric for the next 50 years. In particular, the notion of 'community standards' led to many rhetorical gymnastics.

Across MIM (Morality in Media, NCOSEs previous name between 1968 and 2015)'s public communication, a clear stance is evident: all pornography is considered obscene and thus interpreted as illegal. As courts often failed to interpret laws in MIM's way, one of MIM's early areas of active intervention was educating those who make and uphold laws. In 1970, the US President's Commission on Obscenity and Pornography delivered a report that called to end 'all legal restraints on the distribution of sexually explicit materials to consenting a

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(Holles, 1974). The report was followed by a minority report by some of the commission members, among them Father Hill, the founder of NCOSE (then OY), who was assisted in writing the minority report by lawyer Paul McGeady, later MIM's general counsel. The minority draft described the majority report's findings as 'scanty, manipulated, and fraudulent' (Holles, 1974). The majority report was disowned by then-Attorney General, the Congress, and President Nixon, who rejected its 'morally bankrupt conclusions' (Vile, 2009). However, MIM did not stop at that; they also set up a National Legal Data Center (NLDC), which a 1974 New York Times article describes as a 'thinly concealed arm of Father Hill's Morality in Media Crusade'. The NLDC tracked obscenity cases and conducted 'training seminars for prosecutors, the police, and other law enforcement officials' and 'helped them in the courtroom' (Holles, 1974). The Center received \$350,000 in congressional earmarks between 1973 and 1975, closed its doors in 1975 due to lack of funding, and re-opened a year later in 1976 as the 'National Obscenity Law Center' (NOLC), both part of MIM and headed by McGready (Dalianis, 1998). In 1996, McGready noted that NOLC provided 'services to approximately 800 prosecutors, 50 law libraries, and 50 other groups and individuals about the complexities of obscenity law' (McGready, 1996: p. 733). NCOSE's current 'legislative policy' continues to seek to 'educate Congress and state legislatures, so policymakers produce legislation' that aligns with their mission (NCOSE, n.d.). Beyond pedagogy, MIM attempted to persuade the highest lawmakers directly, particularly via a 1983 private session with Ronald Reagan, where pornography, cable television, and danger to children were discussed. This marked a specific shift in media focus by MIM from film and print to broadcast.

Active Intervention: CDA

As the 1990s ushered in new intermediaries for distributing content and information, MIM's and other conservative stakeholders' gaze shifted to the internet. A series of legal cases that defined the limits on the immunity that intermediaries retain 'for legal claims arising out of the words and images created by others' (Kossef, 2019, p. 10) were fought, including some that focused specifically on online obscenity. The conflicting interests between different stakeholders paved the way for the Communications Decency Act (CDA) of 1996.

MIM was 'deeply involved in the issue of Internet pornography' and 'active supporters of the 1996 Communications Decency Act' (Lane, 2001: p. 100). The CDA was sponsored by Senator Exon, who framed the need for it via concerns that the 'information superhighway' is a 'red light district', and the proposed law is a way to protect 'children and families' from

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and 'inappropriate communications' (Cannon, 1996, p. 53). The initial version of the CDA received a lot of criticism from the tech industry and free speech activists, at which point four defenses were added. Those, however, were objected to by conservative organizations, including MIM. Finally, with multiple amendments, CDA was added to the Senate's version of the telecommunications bill of 1995. A year later, it was passed and signed into law by President Clinton. However, Robert Peters, then-president of MIM, lamented that 'many of Morality in Media's suggestions ultimately were not adopted' (Lane, 2001: p. 100) and the sections of the CDA explicitly focused on regulating obscenity came under immediate fire. In 1997, *Reno v. ACLU* struck down parts of the CDA as violating the first amendment (much like *Stanley v. Georgia* but for the Internet). Justice Stevens wrote in the decision that while what children access needs to be restricted, suitability for children as a measure of what is allowed online is an unacceptable 'burden on adult speech' (*Reno v. ACLU*, 1997). In 1997, the Supreme Court held CDA unconstitutional, although legal battles continued for years. One of the few sections of the CDA that remained was Section 230 – broadly considered one of the most critical pieces of internet governance legislation. It exempts internet intermediaries from liability for what users post, stating that 'no provider or user of an interactive computer service shall be treated as the publisher or speaker of any information provided by another information content provider' (Section 230, 1996). This, as we will show shortly, became a new battleground for MIM, which led to a shift from the goal of 'rigorously upholding obscenity law' to the need for 'obscenity law for the internet'.

Active intervention: COPA

MIM and other conservative groups pushed back on the stripping of CDA from the parts that would function as obscenity law for the internet and inserted themselves in preparing the federal Child Online Protection Act (COPA). In MIM press materials focused on COPA (published between 1998 and 2009), the act is initially celebrated as a victory in the war on obscenity. It is evident that MIM commented on an early draft into which their additions were incorporated. The press materials indicate that MIM believed their additions, in particular of specific legal language, would save COPA from the fate of CDA. In a 1998 newsletter, MIM wrote: 'MIM believes that COPA, unlike the Communications Decency Act (CDA) of 1996 (which was struck down by the U.S. Supreme Court), can withstand a constitutional challenge in part because of the changes we suggested (...). The new law also includes a proposal that MIM put forth after the Supreme Court invalidated the CDA in 1997. This proposal was that Congress establish a "Blue Ribbon Commission" to make

recommendations on how to reduce minors' access to Internet pornography' (NCOSE, 1.11.1998). This 'Blue Ribbon' commission was set up as the Commission on Online Child Protection (which MIM's above-mentioned legal council Paul McGeady was on). Its goal was to 'conduct a study to identify technological or other methods that will help reduce access by minors to material that is harmful to minors' (NCOSE 20.10.2000). They delivered their final findings in 2000.

COPA passed, but was struck down three times in 2000, 2003, and 2007, leading to a permanent injunction by the Supreme Court in 2010. Despite MIM's belief in their addition of: 'a scienter (knowledge of criminal activity) requirement, improving the definition of "engaged in the business" using language in Federal obscenity law, improving the definition of "harmful to minors" using language from New York State law' (NCOSE 1.11.1998) COPA was deemed to violate the First Amendment of the U.S. Constitution. Instead, parental use of filtering technologies was positioned as sufficient to protect minors. This was a direct failure for NCOSE. McGeady and the Commission on Online Child Protection explicitly argued that laws that rely on requiring filters by parents, school officials or libraries are "a weak, ineffective answer to the overall problem of children's access to harmful material" recommending instead "vigorous enforcement of the federal laws against Internet obscenity" (NCOSE 20.10.2000).

Even after its failures, MIM continued to elevate COPA as a law that would have helped 'win the war on obscenity' and 'protect children'. The decade of COPA discourse often positioned the Justice Department, the FBI, Congress, and the FCC as perpetrators, suggesting that all of these institutions failed America when they 'adamantly refused to enforce the existing laws against Internet obscenity' (NCOSE 20.10.2000). MIM went as far as to explicitly argue that enforcement of obscenity laws is more important than focusing on 'sexual exploitation of children crimes' (NCOSE 04.08.2010), indicating that for MIM, like many other moral entrepreneurs, protecting children serves as a rhetorically persuasive excuse for a blanket ban on obscenity.

In what follows, we explore two dominant and related themes within NCOSE's COPA discourse: first, 'all porn is hardcore porn, thus obscene, thus illegal', and second, 'porn creates child exploitation'. Both are scaffolded by a strong theory rhetoric of media effects ([Paasonen et al., 2020](#)). We focus on NCOSE's rhetorical gymnastics (creation of linkages, misrepresentation, obfuscation, and sensationalization to legitimize NCOSE's version of problems and solutions).

Rhetorical gymnastics: From ‘all porn is illegal’ to ‘porn is a gateway to child exploitation’

For decades, NCOSE has implied that all pornography equates to hardcore pornography and, most importantly, that hardcore pornography is obscene and, thus, under obscenity laws – were those only upheld more rigorously – illegal. They make these claims far more explicitly in their COPA discourse. Then-president Robert Peters argued that “today, most adult pornography distributed commercially, whether online or elsewhere, is ‘hardcore’” (NCOSE, 25.09.2009). Often these discussions come with sensational lists of what online pornography entails, where ‘adultery’, ‘unsafe sex’, and ‘group sex’ are presented alongside ‘sex with animals, sex with excrement, sex with siblings, sex with she-males, male-on-male rape, and the degradation, rape, and torture of women’ (NCOSE, 12.09.2007). These lists – the language used (including the slur for transgender people) and the categorization and comparisons enacted – and accompanying claims that most commercial websites distribute hardcore pornography (NCOSE, 28.01.2009) and that there are ads for child porn on commercial online porn websites (NCOSE, 28.04.2008) are tactics of misrepresentation and sensationalization intended to sow disgust and panic.

Further, the argument of all online pornography being illegal is made in two particular ways, both articulated in relation to Miller. First, MIM continually argues that pornography violates the third test in Miller, claiming that most pornography has no artistic or cultural value. However, the first test of Miller (community standards) puts MIM in a difficult position. On the one hand, the organization is interested in arguing that the spread of pornography has reached epidemic levels, a trope common in media, sex, and technology panics (Tiidenberg and van der Nagel, 2020), and thus needs urgent solutions. Yet, MIM needs to articulate that this epidemic does not signal community acceptance, lest it meet the first test of Miller. In COPA discourse, we see MIM undertaking significant rhetorical gymnastics to do this work. ‘Just because a person experiments with hardcore adult pornography for some time (or on occasion) succumbs to the temptation to view it’, MIM writes: ‘does not mean he or she approves of what is viewed, especially when hardcore adult pornographers promote their products aggressively’ (NCOSE, 25.09.2009). Further, NCOSE relies on the rhetoric of a strong theory of media effects, particularly the notion of addiction, another trope often used in the intersecting sex, media, and technology panics (Tiidenberg and van der Nagel, 2020; Clarkson and Kopaczewski, 2013; Szablewicz, 2010; Cover, 2006). MIM/NCOSE uses the term ‘addicted’ or ‘hooked’ in nearly every COPA-themed text we analyzed, arguing that ‘much if

not most hardcore adult pornography is consumed by a relatively small percentage of individuals who are addicted to it' (NCOSE, 25.09.2009).

As moral entrepreneurs often do (Goode and Ben Yehuda, 2013; Rubin, 1984), MIM also created explicit rhetorical linkages in COPA between pornography and harm to children. The notable rhetorical strands where MIM narrates this causal link pertain to (1) what is depicted in porn, (2) porn as a gateway to child abuse, (3) porn as a tool for training/grooming children as sex workers, (4) porn as a template from which adults AND children learn sexual violence, and (5) porn as an industry that creates demand for prostitutes and thus fuels trafficking, which also leads to trafficking of children. MIM's linking of porn to pedophilia rode the coattails of an ongoing moral panic around child abuse. Boston Globe's Pulitzer prize-winning 'Spotlight Investigation: Abuse in the Catholic Church', (2002) helped to spark a wave of investigations throughout the world, occupying the public consciousness for decades.

In its COPA coverage, MIM argues that porn relies on depictions of 'barely legal' women to promote a visual economy of 'child porn' (NCOSE 12.09.2007). Rhetorical obfuscation confuses actual child porn, which MIM claims pornsites to advertise, with what MIM occasionally admits to be 'pseudo child porn', for example, 'hardcore depictions of sex with persons who look like children' (NCOSE 25.09.2009). This, in turn, is linked to porn having an appetite-creating function. MIM relies on the rhetoric of a 'gateway drug' and the accompanying reference to addiction often used in moral panics to argue that for 'many perpetrators, there is a progression from viewing adult pornography to viewing child pornography' (NCOSE 28.04.2008). 'Men arrested on sexual exploitation of children charges', have ended up where they are because ads of 'young teenagers and even young children, posing in the nude, having sex with each other, or being molested by adults' were popping up on their computer screens and after the initial 'shock wore off', they 'couldn't get enough. Like thousands of other men (they were) hooked' (NCOSE 28.04.2008). Online porn is also situated as a tool that perpetrators of child sexual exploitation utilize to 'entice, arouse, desensitize and instruct' (NCOSE 28.04.2008) their victims. Further, and increasingly outlandishly, porn is argued to harm children by representing a template of sexual relationships that 'destroys marriages, and children raised in one-parent households are more likely to be sexually exploited' (texts in 2007, 2008, 2009), instructs 'Johns' to 'act out what they view in adult pornography with child prostitutes', (texts in 2008, 2009 and 2010), and leads children to 'imitate behavior they view in adult pornography with other children' (NCOSE 25.09.2009). Finally, 'addiction to pornography' is cast as something that 'h

maintain or increase the demand for women and children who are trafficked into prostitution' (texts published in 2007 and 2008). This shift of attention to trafficking becomes central in the next phase of NCOSE's active intervention into legislation – their work toward FOSTA/SESTA.

Active intervention: SESTA and FOSTA

In 2015, the political climate in the United States was rapidly changing, and MIM repositioned itself, changing both its name and rhetoric. They rebranded in 2015 as the National Center on Sexual Exploitation (NCOSE). NCOSE seemed to have decided to tackle obscenity by 'fighting' sexual exploitation and trafficking. The linking of pornography to sexual exploitation and trafficking already evident in the COPA coverage became more prominent in 2015 and 2016. In 2015, NCOSE organized a symposium at the US Capitol called 'Pornography: A Public Health Crisis', which included the tagline 'How Porn Fuels Sex Trafficking, Child Exploitation & Sexual Violence' (NCOSE, 13.07.2015). Also in 2015, Senator Portman and the Senate Permanent Subcommittee on Investigations started work to determine links between child trafficking and [Backpage.com](#) (Koff, 2016), a classified advertising website. NCOSE added [Backpage.com](#) to its Dirty Dozen List, claiming it 'serves as a virtual auction block where sex buyers can shop for human beings for sex'. While direct interactions between Portman and NCOSE have not been reported, we observed a steady trickle of Portman's work against Backpage being 'applauded' in NCOSE texts (NCOSE 17.03.2016).

Portman's work on Backpage created a direct link between the inability of courts to punish sex traffickers and CDA230. This rhetorical linkage spawned the *Stop Enabling Sex Traffickers Act* (SESTA) and its incorporation into the *Allow States and Victims to Fight Online Sex Trafficking Act* (FOSTA), both of which NCOSE worked openly and diligently toward. Across NCOSE's FOSTA/SESTA texts between 2017 and 2022, sex trafficking takes center stage as the predominant problem, with the internet more broadly and CDA230 specifically being framed as the biggest hurdle in legislative efforts to combat it. With the shift toward the rhetoric of exploitation and trafficking comes also an explicit anti-internet stance. Both ride broader waves of public sentiment and anxiety – intensified conspiracy theories about widespread pedophilia among the political elites (e.g. Pizzagate in 2016) and the Cambridge Analytica scandal in 2018, which primed the audience primed to distrust 'Big Tech'. According to NCOSE 'The Internet' the reason for epidemic levels of 'sexual exploitation of women and children' (NCOSE, 19.07.2018), and NCOSE are 'confronted with a relentless stream

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technology-related issues exponentially compounding efforts to combat sex trafficking' (NCOSE, 10.01.2020). Amending CDA is cast as 'the most important, most urgent legal issue', and CDA is regularly called 'outdated', 'archaic', and actively harmful (repeated across texts in 2017, 2018). Specific perpetrators shift from [Backpage.com](#) to OnlyFans and Twitter.

In the following, relying on the discourse analysis of the selected NCOSE texts on FOSTA/SESTA, we briefly explore NCOSE's rhetorical gymnastics involved in their anti-internet discourse.

Rhetorical gymnastics: Big tech versus survivors

To shape the internet into a monster suited for slaying in a moral panic, NCOSE articulates 'Big Tech' as the public enemy during these times. Audiences are explicitly called to join NCOSE 'in the battle against Big Tech on sex trafficking' (NCOSE, 20.09.2018). To more persuasively frame Big Tech as a villain, NCOSE rewrites the history of CDA and articulates a new victim.

Even though NCOSE lobbied in support of CDA, its only legally upheld remainder – Section 230 – is now cast as something that allowed the internet to 'become a major vehicle for making obscene material easily accessible to children' (NCOSE, 12.03.2018). NCOSE's materials incorrectly claim that 'although Congress intended for Section 230 to protect companies which try to filter content, but don't catch everything, that protection was expanded by federal judges to provide a website operator with full immunity, even if it knowingly engaged in criminal conduct!' (NCOSE, 18.07.2018) and that CDA protects the 'kingpins of sex trafficking' because it protects 'websites even if they knowingly participated in the crime of sex trafficking' (NCOSE, 23.02.2018). This is an explicit misrepresentation of the fact that sex trafficking and child pornography violate federal law and thus 'exempt from Section 230's immunity' anyway (Kosseff, 2019: p. 246).

While in previous, more explicitly anti-pornography discourse, children, the American family, and even poor porn-addicted men were portrayed as victims, the FOSTA/SESTA era discourse shifts to 'victims of sex trafficking' and 'survivors'. This coincides with the #metoo movement, which NCOSE used to bolster its rhetoric. NCOSE increasingly utilizes the language of 'listening to survivors' and 'believing victims'. Template tweets include FOSTA/SESTA-specific hashtags (#FOSTA, #SESTA, #AmendCDA230) but cynically astroturf (Leaver et al., 2019) hashtags from feminist, anti-sexist, and activist networked publics to address different imagined audiences. Thus #metoo #listentosurvivors or #IAmJaneDoe is often used alongside the FOSTA/SESTA hashtags. NCOSE constructs a moral conflict

sides between the corporate interests of Big Tech versus the victims. For example, in a template tweet the audience is invited to thank the Senate Maj. Leader 'for standing with #SexTrafficking victims rather than #BigTech in this David and Goliath battle!' (NCOSE, 28.02.2018) and 'Big Tech' is described as being worried about the 'potentially devastating filtering costs' instead of the 'actual devastating emotional, psychological, and physical costs' of sex trafficking to victims (NCOSE, 29.09.2017).

In a particularly disingenuous turn of rhetoric, NCOSE's Lisa Thompson writes: 'If there is a single legislative test of the strength of our national resolve to deliver on the promise of #MeToo, then surely it is the battle over passage of the much needed FOSTA/SESTA legislative package that would amend the Communications Decency Act to fight online sex trafficking', and later in the same text: 'Members of the U.S. Senate this is your moment to decide: does the spirit of #MeToo that has swept our country include victims of the sexual exploitation and sex trafficking or not' (NCOSE, 12.03.2018).

Informed by the setbacks of COPA and CDA, NCOSE's FOSTA/SESTA discourse is explicitly preoccupied with legal language (NCOSE, 23.02.2018). Calls to only pass SESTA and later FOSTA with specific language (NCOSE 26.02.2018) later merged with alarmist coverage on NAFTA (North American Free Trade Agreement) and USMCA (United States-Mexico-Canada Agreement). 'Big Tech' – is argued to 'stealthily incorporate old Section 230-like language' into new legislation, thus exporting 'protections for online sex trafficking websites across the North American continent and beyond', which will make 'sex trafficking (...) the U.S.'s biggest export' (NCOSE, 17.08.2018). Emboldened by what they consider a huge FOSTA/SESTA success, NCOSE continues to push for 'next steps'. The Eliminating Abusive & Rampant Neglect of Interactive Technologies (EARN IT) act is argued to 'develop recommended best practices for providers of interactive computer services regarding the prevention of online child exploitation' and positioned as the necessary next step and 'best piece of accountability in the tech space since the passage of FOSTA/SESTA in 2018' (NCOSE, 5.3.2020).

Conclusion

Over time, NCOSE's 'war on obscenity' has evolved from calls to more rigorously uphold existing obscenity laws to attempts at directing legislators' interpretation of those laws via pedagogical intervention to more direct intervention in legislation. Over 60 years, NCOSE has acted as a moral entrepreneur, lobbying against the putative threat (Goode and Ben-Yehuda, 2009) of widespread obscenity. While it is impossible for us to claim the extent to which this

concern is genuine and to which extent this is NCOSE acting as an 'organized ideological force' (Hall, 1988) set on controlling public discourse (primarily by expelling from it all sexual expression), we have shown how they have organized, recruited and proselytized (Goode and Ben-Yehuda, 2009) in ways not only intended to rile up the public, but targeted at, or at least eminently intelligible to the legislators (Krinsky, 2013).

The CDA represented NCOSE's first step in trying to explicitly shape internet governance. Despite CDA passing in a form NCOSE was dissatisfied with, this represented a shifting focus from merely 'upholding obscenity law' to creating 'obscenity law for the internet'. After CDA, NCOSE's next active intervention in legislation pertained to COPA. In that coverage, we illustrate NCOSE's framing of pornography as the predominant social threat through narratives of the addicted publics (men, children) as victims, and online pornsites as perpetrators, evoking the trifecta of anxieties (Tiidenberg and van der Nagel, 2020) typical in sex, media, and technology panics (Cohen, 1972). Within NCOSE's COPA coverage exists a clear, strong media-effects theory (Paasonen et al., 2020) narrative that not only frames all pornography as illegal but also performs elaborate rhetorical gymnastics pertaining to the epidemic levels of, yet general public rejection of obscene content. NCOSE constructs moralized subjects who are disgusted by pornography but powerless against its pull, so 'pseudo' child pornography leads to a need for actual child porn, which was portrayed as directly leading to child sexual exploitation. This pivot toward exploitation took center stage in NCOSE's campaign for FOSTA/SESTA, coinciding temporally with human trafficking and pedophilia-related conspiracy theories in populist US political discourse (e.g. Pizzagate, QAnon). In this conjuncture (Hall, 1986), 'the internet', 'big tech', and specifically 'CDA230' become primary villains in NCOSE discourse, and a new victim – survivors of trafficking – is introduced. In a move echoing and updating prior moments of conservatives and feminists uniting in their disgust for porn (West, 1987), NCOSE appropriates the timely #metoo language to push their agenda, now via deplatforming all sex (Moldrem, 2006) from the internet. We argue that NCOSE weaponizes historical concerns pertaining to the intersection of sex, technologies, and public behavior (Tiidenberg and van der Nagel, 2020) to gain hegemonic power (Hall, 1985) over public expression in order to strengthen conservative ideologies. In so doing, inserting themselves into internet governance discourse and starting to advocate for more rigid policing of intermediaries, getting rid of the shield from liability provided by CDA230, and advocating for stricter limits of free expression seems both accidental and inevitable.

NCOSE's FOSTA/SESTA coverage seems to imply a retrospective self-reflection on NCOSE's part of what NCOSE frames as failures of CDA and COPA, and the success of FOSTA/SESTA is uniformly attributed to legal language. The CDA, initially something NCOSE supported and had hoped for in their war against obscenity, becomes retrospectively viewed as a harmful, archaic piece of legislation because of its permissive language when attributing liability to internet intermediaries. Having finally managed to make intermediaries liable for what users post in FOSTA/SESTA, NCOSE now keeps a paranoid eye on all new legislation that pertains to internet governance, trying to avoid 'big tech' 'sneaking in' CDA230-like language. While many scholars, politicians, and activists agree that CDA230 might need amending, FOSTA/SESTA was both unnecessary, given that sex trafficking and child pornography are already illegal and therefore not protected under CDA230, and harmful, because of its vague wording and anti-sex-worker sentiment, which invited regulatory overreach (Blunt et al., 2021). NCOSE's earlier arguments that enforcement of obscenity laws should take precedence over focusing on actual crimes of child exploitation invite skepticism regarding their expressed goals of protecting victims and survivors of trafficking. Now, NCOSE has come to incorporate an explicitly hostile stance toward values of freedom of information, expression, and speech that remain foundational to the basic logic of the internet since its inception.

This paper situates contemporary Internet governance in historical trajectories and political, ideological and pragmatic interests of variously motivated actors. It highlights the need for internet governance scholarship to take a more systematic and long-term view, sometimes so long as to precede the internet, to pinpoint the stakeholders we need to keep an eye on in order to be able to analyze the governance complex in its entirety. It reminds us to trace the trajectories of the imaginaries of riskiness and harmfulness, as they become attached to types of expression and content, and to take sex, as well as other morally overburdened areas seriously as battlegrounds for internet and technology governance. At different conjunctures, possibly decades later, a version of regulation or moderation will emerge as justifiable, reasonable, or logical from these imaginaries. The history and connections presented here are ongoing, and efforts undertaken by moral entrepreneurs continue to affect the evolution of governance on the internet.

What we have gathered here is not just a history of a particular organization, but insight into larger structures of power that influence internet governance policy. Bringing conjunctural (Hall et al., 1978; Hakim, 2019) sensibilities into the study of internet governance highlights the explicit role of conservative lobbying groups like NCOSE, even if they have seer

been focusing on adjacent issues of morality and obscenity. Long-standing tactics of these moral entrepreneurs, particularly the rhetorical gymnastics that position their movement alongside ongoing social issues (both fueling and aligning with moral panics), remain key to addressing how policies form and continue to shape internet governance. This is not the first, only, nor the last space where these battles will be fought over internet governance, and we hope taking this approach to understanding, and contextualization will assist in better understandings, better interventions, and a freer and more participatory internet.

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ORCID iD

Zachary J McDowell

Footnote

1. For clarity, we will refer to the organization by its current name – NCOSE when generalizing, and by the name used at the time for time-specific arguments.

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EXHIBIT 6

Internet Filtering and Adolescent Exposure to Online Sexual Material

Andrew K. Przybylski, PhD^{1,2} and Victoria Nash, PhD¹

Abstract

Early adolescents are spending an increasing amount of time online, and a significant share of caregivers now use Internet filtering tools to shield this population from online sexual material. Despite wide use, the efficacy of filters is poorly understood. In this article, we present two studies: one exploratory analysis of secondary data collected in the European Union ($n=13,176$), and one preregistered study focused on British adolescents and caregivers ($n=1,004$) to rigorously evaluate their utility. In both studies, caregivers were asked about their use of Internet filtering, and adolescent participants were interviewed about their recent online experiences. Analyses focused on the absolute and relative risks of young people encountering online sexual material and the effectiveness of Internet filters. Results suggested that caregiver's use of Internet filtering had inconsistent and practically insignificant links with young people reports of encountering online sexual material. Our findings underscore the need for randomized controlled trials to determine the extent to which Internet filtering and related technologies support versus thwarts young people online, and if their perceived utility justifies their financial and informational costs.

Keywords: adolescents, Internet, Internet filtering, online sexual material

Introduction

INTERNET USE, particularly mobile Internet use, has become increasingly significant in children's lives, with average weekly time online doubling for United Kingdom 12–15 year olds between 2005 and 2015.¹ For all the opportunities that the Internet provides for education and communication, concerns about children's access to illegal or potentially harmful content such as pornography remain high on policy agendas, despite the challenges of assessing exposure levels.^{2,3} While exposure and prevalence studies vary in their methods, definitions, and timescales, reviews of the research suggest that many minors report having seen pornography online, with figures higher among boys and for those in older age groups (14–16 years).^{3–5} Boys are also more likely to report intentional viewing of pornography. Few studies measure the frequency of exposure or access to pornography, but a recent large-scale survey of school children across five European countries reported that between 19 percent and 30 percent of 14–17 year olds claim to watch online pornography regularly.⁶ In addition to consuming sexual content, adolescents are exchanging, and even creat-

ing it using their smartphones and other mobile devices. Prevalence figures for sexting are well studied though also vary widely,⁷ raising additional policy concerns relating to coercion, consent, and illegal image creation.⁸

Given the dramatic shifts in Internet usage and the widespread availability of online sexual material, Internet filters—technologies designed to prevent access to pornography or other online content perceived as harmful—are presented as possible protective measures, and on average, a quarter of European families report using them.^{4,9} The United Kingdom government has demonstrated its strong support for such technical protection measures, by requiring Internet Service Providers (ISPs) to provide opt-out family-friendly Internet filtering at household level.¹⁰ This level of intervention is unusual in Europe, as although several governments do mandate the use of filters by ISPs, this usually only extends to the removal of child abuse materials or other locally illegal content.^{11,12} However, following the signature of a European Framework agreement supporting safer Internet use by children and teenagers in 2008, many European states require their mobile operators to follow codes of conduct that should limit minors' access to pornography.¹³

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Despite their wide adoption in the developed world, filters are expensive and imperfect technologies in three key ways: First, in financial terms, they are costly to develop and maintain,¹⁴ and even if offered free at the point of use, their costs are ultimately borne by the consumer or taxpayer.¹⁵ Second, in practical terms, they present the problem of underblocking, a phenomenon in which new problematic sites, content, and apps may slip through. Finally, in informational terms, filters also present the problem of overblocking, wherein the content is unnecessarily blocked, restricting access to necessary health, cultural, and social information. In practice, this means that filters offer only imperfect protection, and impose informational costs on children and adolescents seeking legitimate information, contrary to the information rights recognized in the United Nations Convention on the Rights of the Child.¹⁶ Overblocking weighs most heavily on those who lack accessible sources of information offline; research suggests that lesbian, gay, bisexual, transgender, and questioning adolescents, for example, are particularly reliant on the Internet for information about health and relationships.^{17,18}

Given these substantial costs and limitations, it is noteworthy that there is little consistent evidence that filtering is effective at shielding young people from online sexual material. A pair of studies reporting on data collected in 2005, before the rise of smartphones and tablets, provides tentative evidence that Internet filtering might reduce the relative risk of young people countering sexual material.^{19,20} A more recent study, analyzing data collected a decade after these papers, provided strong evidence that caregivers' use of Internet filtering technologies did not reduce children's exposure to a range of aversive online experiences including, but not limited to, encountering sexual content that made them feel uncomfortable.²¹ Given studies on this topic are few in number and the findings are decidedly mixed, the evidence base supporting the widespread use of Internet filtering is currently weak.

Present research

The present studies were conducted to address this gap in our knowledge by directly assessing the extent to which caregivers' use of Internet filtering technology prevents adolescents from encountering online sexual material. Our aim was to combine secondary data analysis with a preregistered hypothesis testing approach to rigorously assess the question: Do filters have a statistically significant protective effect and if so, is this protective effect practically significant?

Given the very large representative sample of caregivers and adolescents analyzed, and the fact that Internet filters are designed explicitly to filter sexual online content we hypothesized that caregiver use of Internet filtering would have a statistically significant protective effect. However, in light of the mixed findings in the literature we were not confident that this effect would be practically significant. To determine such effectiveness, we applied a statistical technique developed for epidemiological research, namely the number needed to treat (or NNT), which helps clinicians assess the benefits of a treatment relative to its costs or alternative interventions. Briefly, NNT is the number of patients who must be treated for one additional patient to receive a health benefit compared with those without treatment.²² A low NNT, between 1 and 10, is desirable as it minimizes the costs associated with treating many individuals to benefit just one.^{23,24} In the con-

text of Internet filtering, number needed to filter (or NNF) can be calculated to indicate the number of households that must use filtering tools, for one additional child not to be exposed to online sexual content. With this in mind, we sought to determine if fewer than 10 households needed to have Internet filters in place for one additional child to be protected from exposure to a range of online sexual materials.

Methods

Participants

A representative subsample of 9,352 male and 9,357 female young people, ranging in age from 11 to 16 years ($M=13.5$, $SD=1.7$) was drawn from data collected by the EU Kids Online II Study²⁵ for Study 1. EU Kids Online II, a large-scale primary survey of children and parents, was conducted to measure online risks, opportunities, and experiences of young people on the Internet. An equal number of caregivers provided data, so that there were a total of 18,709 caregiver–children pairs. Data were collected in person and explanatory variable detailed below was collected through an interview, whereas the outcome variable was assessed with a pen-and-paper questionnaire administered during the visit. Participants were recruited from the European Union (EU) nations, Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Germany, Denmark, Estonia, Greece, Spain, Finland, France, Hungary, Ireland, Italy, Lithuania, The Netherlands, Norway, Poland, Portugal, Romania, Sweden, Slovenia, the United Kingdom, and a non-EU country, Turkey. For Study 2, a sample of 1,004 adolescents (aged 14 and 15) and an equal number of their caregivers living in England, Scotland, and Wales was recruited using geographic data, household socioeconomic class, participant age, and gender factors based on 2011 United Kingdom Census data. In line with the best open science practices, all study materials, data, and codes are freely available on the Open Science Framework (OSF).²⁶

Ethical review

A comprehensive ethical review for the data collection was conducted by the London School of Economics Ethics Committee (Study 1) and at the University of Oxford (Study 2).

Measures

Explanatory variable: use of Internet filters. In Study 1, this measure was recorded in face-to-face interviews with parents who were asked if they (or their partners or cocaregivers) made use of "Parental controls or other means of blocking or filtering some types of website." In Study 2, caregivers completed a self-report survey item that asked "Do you use the content filters provided by your broadband Internet service and/or mobile providers for the computers, smartphones, or other devices that your child uses?" In both cases, caregivers were provided with three response options 0 "Don't know," 1 "No," and 2 "Yes." Table 1 presents the descriptive statistics for caregiver responses, and indicates that filters were much more frequently used in the 2018 U.K. data (Study 2; 48.8 percent) compared with the 2010 E.U. data (23.0 percent).

Outcome variable: exposure to online sexual material. This variable was assessed by asking young people to complete a confidential pen-and-paper questionnaire (Study 1) or a self-report survey (Study 2) regarding their online experiences in

TABLE 1. OBSERVED FREQUENCIES OF CAREGIVER USE OF INTERNET FILTERING

	Overall Total	Gender		Age (years)					
		Boys	Girls	11	12	13	14	15	16
Study 1 (EU, 2010)									
No, percent	73.2	72.5	73.8	67.8	67.4	70.5	73.5	78.1	81.6
Yes, percent	23.0	23.4	22.5	28.7	28.5	25.1	22.8	18.3	14.7
Do not know, percent	3.8	4.1	3.6	3.4	4.1	4.5	3.7	3.6	3.7
Study 2 (UK, 2018)									
No, percent	45.9	43.3	48.8	—	—	—	44.1	47.7	—
Yes, percent	48.8	51.7	45.6	—	—	—	49.9	47.7	—
Do not know, percent	5.3	5.0	5.6	—	—	—	6.0	4.5	—

the past year (Study 1) or 6 months (Study 2). To ensure confidentiality and minimize socially desirable responding, respondents sealed their questionnaires into envelopes upon completion (Study 1), and caregivers were asked to not be present in the room when adolescents completed their surveys (Study 2). In both studies, participants were asked whether they had seen any of four possible forms of online sexual material in the past year. These included nudity “Images or video of someone naked,” intimate body parts “Images or video of someone’s ‘private parts,’” sexual behavior “Images or video of people having sex,” and violent pornography “Images or video of movies that show sex in a violent way.” It should be noted that these child-friendly descriptors may also capture exposure to nonpornographic materials, such as legally permissible health information, or 18-rated sexually explicit films or music videos. Table 2 presents the frequencies of each kind of sexual material encountered, and includes a composite measure that reflects whether any of the four forms of online sexual material was encountered.

Results

Preliminary analyses

Valid data from a total of 13,176 (Study 1) and 1,004 (Study 2) caregiver–child dyads were analyzed. Results indicated that exposure to online sexual material varied as a function of type of content, participant age, and gender (Table 2). Seeing images or video with nudity was most frequently reported (13.7 percent in Study 1; 33.2 percent in Study 2), whereas

exposure to images or videos that show sex in a violent way was the least common (2.9 percent in Study 1; 9.9 percent in Study 2). Boys reported watching more of all forms of sexual content (between 1.7 percent and 6.9 percent higher), and reports of encountering online sexual material increased monotonically with age from a low of 7.5 percent (among 11 year olds) to a high of 35.4 percent (16 year olds) in Study 1, and were higher among the 15 year olds (40.6 percent) than among 14 year olds (35.4 percent) in Study 2.

Study 1: exploratory analyses

Chi-square analyses presented in Table 3 indicated that caregiver use of Internet filtering was associated with a significantly lower likelihood that young people had recently encountered online sexual material. In standardized terms (i.e., Cramer’s ϕ), the protective effects were quite modest for seeing nudity ($\phi_c=0.067$), private parts ($\phi_c=0.053$), people having sex ($\phi_c=0.056$), violent sex ($\phi_c=0.031$), or any kind of online sexual material ($\phi_c=0.069$) were very modest by this metric.²⁷ Data were available for between 658 (France) and 806 (Bulgaria) participants from each country in the dataset, and country-level analyses were also conducted. The full results are available on the OSF,²⁶ but we would caution against interpreting differences as they might be spurious because the large number of tests (>100) does inflate the false-positive findings’ rate. The overall trend from these analyses indicates that there might be a small overall filtering effect across the EU nations and Turkey in aggregate.

TABLE 2.

	Overall Total	Gender		Age (years)						
		Boys	Girls	11	12	13	14	15	16	
Study 1 (EU, 2010)										
Images or video of someone naked, percent	13.7	15.8	11.5	5.3	7.2	10.7	14.7	20.9	23.5	
Images or video of someone’s “private parts,” percent	9.3	11.2	7.3	3.0	3.7	6.7	10.3	14.8	17.2	
Images or video of people having sex, percent	10.1	13.6	6.7	3.1	4.6	6.9	11.2	16.2	19.1	
Images or video of movies that show sex in a violent way, percent	2.9	3.8	2.1	1.0	1.2	1.9	3.6	4.5	5.4	
Images or video of any of the above, percent	20.5	24.4	23.4	7.5	10.8	15.8	23.4	32.6	35.4	
Study 2 (UK, 2018)										
Images or video of someone naked, percent	33.2	35.7	30.2	—	—	—	30.6	35.7	—	
Images or video of someone’s “private parts,” percent	25.0	27.6	21.9	—	—	—	22.4	27.4	—	
Images or video of people having sex, percent	20.8	23.5	17.8	—	—	—	20.2	21.4	—	
Images or video of movies that show sex in a violent way, percent	9.9	11.3	8.4	—	—	—	8.1	11.6	—	
Images or video of any of the above, percent	38.0	40.4	35.1	—	—	—	35.4	40.6	—	

TABLE 3. OBSERVED FREQUENCIES OF ADOLESCENTS' REPORTS OF EXPOSURE TO ONLINE SEXUAL MATERIAL AND TESTS OF INTERNET FILTERING EFFECTIVENESS

	Filtering		Chi-square		Absolute risk filtering absent		Absolute risk filtering present		Absolute risk reduction filtering		Households needed to filter	
	Absent	Present	χ^2		AR	95 percent CI	AR	95 percent CI	ARR	95 percent CI	NNF	95 percent CI
Study 1 (EU, 2010)												
Images or video of someone naked	No	8,277	2,795		0.17	0.17–0.18	0.12	0.10–0.13	0.06	0.04–0.07	17	14–23
	Yes	1,737	367									
Images or video of someone's "private parts"	No	8,832	2,910		0.12	0.11–0.12	0.08	0.07–0.09	0.04	0.03–0.05	26	20–37
	Yes	1,182	252									
Images or video of people having sex	No	8,728	2,890		0.13	0.12–0.13	0.09	0.08–0.10	0.04	0.03–0.05	24	18–33
	Yes	1,286	272									
Images or video of movies that show sex in a violent way	No	9,643	3,086		0.04	0.03–0.04	0.02	0.02–0.03	0.01	0.01–0.02	77	51–153
	Yes	371	76									
Images or video of any of the above	No	7,431	2,558		0.23	0.22–0.24	0.16	0.15–0.18	0.07	0.05–0.08	15	12–20
	Yes	2,240	505									
Study 2 (UK, 2018)												
Images or video of someone naked	No	284	316		—	—	—	—	—	—	—	—
	Yes	161	151									
Images or video of someone's "private parts"	No	322	345		—	—	—	—	—	—	—	—
	Yes	114	120									
Images or video of people having sex	No	344	361		—	—	—	—	—	—	—	—
	Yes	88	105									
Images or video of movies that show sex in a violent way	No	413	406		0.07	0.05–0.09	0.14	0.11–0.17	–0.07	–0.11 to –0.03	–15	–37 to –9
	Yes	31	64									
Images or video of any of the above	No	277	294		—	—	—	—	—	—	—	—
	Yes	178	191									

Note: NNF is the number needed to filter, both number of households needed to filter and the 95 percent confidence intervals rounded to whole households. Values presented are rounded to the hundreds place, but the precision of the computations was confined to 15 significant figures.

*Chi-square test significant at $p < 0.001$ denotes 95 percent CI around the point estimates. For significant models, AR denotes absolute risk of encountering online sexual material. ARR denotes absolute risk reduction of filtering on encountering online sexual material.

We calculated absolute risk reduction of exposure to online sexual material associated with caregivers using filtering technology in practical terms.²⁸ These results, displayed in Table 3 (top), were used to calculate the number of households which would have to be filtered (NNF) to prevent one young person, who would otherwise see sexual material online, from encountering it over a 12-month period.²⁴ Depending on the form of content, results indicated that between 17 and 77 households would need to be filtered to prevent a young adolescent from encountering online sexual material. A protective effect lower than we would consider practically significant.

Study 2: confirmatory analyses

To provide a rigorous test of the exploratory findings derived from the 2010 data we aimed to replicate the findings we derived from Study 1 with a follow-up study we ran with caregivers and adolescents in England, Wales, and Scotland. Given that the British ISP and mobile filtering systems now extend to phones and is on by default for new Internet subscribers, we reasoned that a NNF lower than 10 would be reasonable and practically impactful. In line with this goal, we registered an analysis plan ahead of data collection,²⁹ and conducted an a priori power analysis to ensure that our planned sample size, $n = 1,000$, would be highly sensitive ($1 - \beta = 0.95$) using a two-tailed significance test.

Following the analytic approach implemented in Study 1, we did not find confirmatory evidence that filters were effective for seeing nudity, private parts, people having sex, or any of the four types in line with our preregistered hypotheses. In fact, contrary to our predictions we found evidence in the direction opposite to what we hypothesized in one case: households reporting using filters were more, not less, likely ($\phi_c = 0.109$) to have an adolescent who reported having seen violent pornography in the past 6 months (Table 3, bottom).

Discussion

Summary

Many caregivers and policy makers consider Internet filters a useful technology for keeping young people safe online. Although this position might make intuitive sense, there is little empirical evidence that Internet filters provide an effective means to limit children's and adolescents' exposure to online sexual material. There are nontrivial economic, informational, and human rights costs associated with filtering that need to be balanced against any observed benefits. Given this, it is critical to know possible benefits can be balanced against their costs. Our studies were conducted to test this proposition, and our findings indicated that filtering does not play a practically significant protective role.

Exploratory analyses using 2010 data from the EU indicated that adolescents whose parents used filtering reported statistically significantly lower levels of exposure to online sexual material. Although it was not surprising that these differences were statistically significant given the size of the sample, we did not expect the protective effect to be as small as observed. We found that this protective effect was modest, accounting for less than 0.5 percent of the variability we observed in our outcome variables. In other words, more than 99.5 percent of whether a young person encountered online sexual material had to do with factors beside their caregiver's use of Internet filtering technology. Our confirmatory ana-

lyses, based on 2018 data from the United Kingdom, provided a more rigorous test of filtering effects. This delivered conclusive evidence that filters were not effective for protecting young people from online sexual material.

The findings speak to the mixed results in the existing literature and suggest that both positive and null effects observed for filtering might be partially accurate. Drawing on two large samples, we found only small and inconsistent effects. If filtering is not a robust or consistent factor in protecting young people online, it is possible that positive evidence are false-positive results driven by publication bias or the misinterpretation of statistically, but not practically, significant relationships in large-scale social data. These findings suggest that future research testing the protective impact of filters should take the form of preregistered experimental trials that directly gauge the effectiveness of filtering across a range of youth outcomes.

From a policy perspective, these results suggest that if judged against the standards of a health treatment, on-by-default home and mobile Internet filters are not an effective intervention to protect young people online. Our findings raise the question of whether mandatory state-funded Internet filtering in schools should still be regarded as a cost-effective intervention, while also providing a clear rationale for investigation of other preventative methods, such as age verification tools, or educational strategies to support responsible behavior online and promote resilience.

Limitations

Our analysis presents limitations that point to two areas for improvement: First, although our data were broadly representative of European and British young people, the data in both cases were cross-sectional. Experimental evidence is needed to determine the value of implementing filters where none exist for young people at different ages and for families from diverse backgrounds. Second, although our study benefited from convergent reports between young people and their caregivers, the data were entirely for self-report. Future work should technologically verify the presence (or absence) of filtering technology as well as access to online sexual material.

Conclusions

The struggle to shape the experiences young people have online is now part of modern parenthood. This study was conducted to address the value of industry, policy, and professional advice concerning the appropriate role of Internet filtering in this struggle. Our preliminary findings suggested that filters might have small protective effects, but evidence derived from a more stringent and robust empirical approach³⁰ indicated that they are entirely ineffective. These findings highlight the need for a critical cost-benefit analysis in light of the financial and informational costs associated with filtering and age verification technologies such as those now being developed in some European countries like the United Kingdom.³¹ Further, our results highlight the need for registered trials to rigorously evaluate the effectiveness of costly technological solutions for social and developmental goals.

Author Contributions

A.K.P. and V.N. are the sole authors of this work. A.K.P. designed the analytic approach, both interpreted the findings, and wrote the draft and final versions of the manuscript as submitted.

Author Disclosure Statement

No competing financial interests exist.

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EXHIBIT 7



Effects of a 7-Day Pornography Abstinence Period on Withdrawal-Related Symptoms in Regular Pornography Users: A Randomized Controlled Study

David P. Fernandez¹ · Daria J. Kuss¹ · Lucy V. Justice¹ · Elaine F. Fernandez² · Mark D. Griffiths¹ Received: 9 August 2022 / Revised: 14 November 2022 / Accepted: 20 December 2022
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Abstract

Little is known about whether withdrawal-like symptoms manifest when regular pornography users attempt to abstain from pornography. The present study used a randomized controlled design to examine whether (1) negative abstinence effects that may be potentially reflective of withdrawal-related symptoms manifest when a non-clinical sample of regular pornography users attempt to abstain from pornography for a 7-day period and (2) these negative abstinence effects would only manifest (or manifest more strongly) for those with higher levels of problematic pornography use (PPU). A total of 176 undergraduate students (64.2% female) who were regular pornography users (defined as having used pornography \geq three times a week in the past 4 weeks) were randomly assigned to an abstinence group (instructed to attempt abstinence from pornography for 7 days, $n = 86$) or a control group (free to watch pornography as usual, $n = 90$). Participants completed measures of craving, positive and negative affect, and withdrawal symptoms at baseline and each night of the 7-day period. Contrary to the confirmatory hypotheses, there were no significant main effects of group (abstinence vs. control) or group \times PPU interaction effects on any of the outcome measures, controlling for baseline scores. These findings indicate that no evidence of withdrawal-related symptoms was found for abstaining participants, and this was not dependent on level of PPU. However, exploratory analyses showed a significant three-way interaction (group \times PPU \times past 4-week frequency of pornography use [FPU]) on craving, where an abstinence effect on craving was found at high levels of PPU only once past 4-week FPU reached the threshold of daily use. While these exploratory findings should be interpreted with caution, they suggest that abstinence effects could potentially manifest when there is a combination of high PPU and high FPU—a hypothesis that warrants investigation in future prospective abstinence studies.

Keywords Pornography · Abstinence · Addiction · Withdrawal · Craving · Affect

Introduction

Pornography use is a common activity in the developed world, with nationally representative studies showing that 76% of men and 41% of women in Australia reported using pornography within the past year (Rissel et al., 2017), and that 47% of men and 16% of women in the USA reported using pornography at a monthly or greater frequency (Grubbs et al., 2019a)

Problematic Pornography Use

Given the increasing prevalence of pornography use, the potential negative psychological effects of pornography use (particularly in relation to its problematic or addiction potential) have been the subject of growing empirical attention in recent years (de Alarcón et al., 2019, Grubbs & Kraus, 2021, Grubbs et al., 2020). Research to date has generally indicated that while the majority of individuals who use pornography report doing so in a non-problematic way (Böthe et al., 2020b), a subset of users report addiction-like symptoms such as impaired control over their pornography use (Böthe et al., 2018, Kor et al., 2014) and self-identify as being ‘addicted’ to pornography (Grubbs et al., 2018).

Despite these self-reports, researchers still disagree about whether habitual pornography users can develop genuine

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addictions to pornography and manifest addiction-related symptomatology akin to substance addictions. Some have argued that pornography is inherently addictive due to it being a particularly novel and rewarding stimulus (Hilton Jr., 2013) and that symptoms of dysregulated pornography use fit within an addiction framework, sharing similar neurobiological mechanisms with substance addictions and other behavioral addictions (Gola et al., 2017, Love et al., 2015), while others hold the view that pornography addiction is not a valid clinical entity and can instead be explained by non-pathological learning (Ley et al., 2014). One model (Grubbs et al., 2019b) has posited that while some users may experience genuine dysregulation in their pornography use, other users may inaccurately pathologize their use even in the absence of genuine dysregulation due to moral incongruence (i.e., using pornography while morally disapproving of it)—suggesting that self-diagnoses of “pornography addiction” should be regarded with caution.

The lack of consensus concerning how best to conceptualize dysregulated use of pornography has also been in large part due to ongoing debates in the field about how to conceptualize out-of-control sexual behaviors more broadly (Fernandez & Griffiths, 2021). There have been numerous theoretical conceptualizations of out-of-control sexual behaviors over the years, including sexual addiction (Carnes, 1983), sexual impulsivity (Barth & Kinder, 1987), compulsive sexual behavior (Coleman, 1991), and hypersexual disorder (Kafka, 2010). As a result of the varying theoretical frameworks, the term problematic pornography use (PPU) has typically been used in the literature likely because it is the most theoretically neutral term that encompasses any conceptualization of the phenomenon and includes problematic use at the subclinical end of the spectrum (Fernandez & Griffiths, 2021).

Most recently (in 2019), the World Health Organization (WHO) included the diagnosis of compulsive sexual behavior disorder (CSBD) as an impulse control disorder in the eleventh revision of the *International Classification of Diseases* (ICD-11; WHO, 2019), under which PPU may be subsumed. According to the ICD-11, CSBD is characterized by “a persistent pattern of failure to control intense, repetitive sexual impulses or urges, resulting in repetitive sexual behavior... over an extended period (e.g., six months or more) and causes marked distress or significant impairment in personal, family, social, educational, occupational or other important areas of functioning” (World Health Organization, 2019, p. 1). The ICD-11 also states that distress entirely related to moral judgments and disapproval about sexual impulses, urges or behaviors is not sufficient to meet the distress criterion. Overall, a conservative approach was taken for the ICD-11 in classifying CSBD as an impulse control disorder instead of an addictive disorder because there is (to date) insufficient evidence to determine whether the processes involved in the

development and maintenance of the disorder are equivalent to other recognized forms of addiction (Kraus et al., 2018).

While the current ICD-11 CSBD diagnosis is a good starting point for unified assessment of the disorder, more research on its precise phenomenology and neurobiological underpinnings is needed to determine whether it should be re-classified as an addictive disorder in future iterations of diagnostic manuals (Griffiths, 2022, Kraus et al., 2016, 2018, Sassover & Weinstein, 2022). Determining whether CSBD (and by extension, PPU) is best conceptualized as an addictive disorder is important to ensure that appropriate pharmacological and psychological treatments are delivered depending on the specific neurobiological mechanisms and clinical features involved (Böthe et al., 2022, Briken & Turner, 2022, Kingston, 2015, Kor et al., 2013, Lew-Starowicz & Coleman, 2022, Potenza et al., 2017). While debated (Castro-Calvo et al., 2022, Rumpf & Montag, 2022), some (Sassover & Weinstein, 2022) have proposed that to properly assess the phenomenology of CSBD, a comprehensive examination of all six components of Griffiths’ (2005) components model of addiction (i.e., salience, mood modification, conflict, withdrawal, tolerance and relapse) is needed. The present study focuses on the potential manifestation of the withdrawal component specifically in relation to PPU.

The Assessment of Withdrawal in Relation to Problematic Pornography Use

Withdrawal can be defined as the unpleasant affective states and/or physical reactions that occur when a substance or behavior is abruptly ceased or reduced (Griffiths, 2005). Withdrawal syndromes for most addictive substances are well-established, common symptoms of which include symptoms related to emotional distress such as depressed mood, anxiety or insomnia (Shmulewitz et al., 2015), while similar withdrawal-like symptoms such as depressed mood, irritability and/or anger, and anxiety have been retrospectively self-reported in clinical samples across problematic behaviors such as gambling (e.g., Błazczynski et al., 2008) and sexual behaviors (e.g., Wines, 1997).

In the present study, it is posited that investigating the potential manifestation of withdrawal-related symptoms in relation to PPU is important for a few reasons. First, some limited empirical research has indicated that self-perceptions of withdrawal-like symptoms are not uncommon among individuals who have attempted to abstain from pornography. A cross-sectional survey of Polish students who were current pornography users ($N=4260$) found that among those who had at least one past pornography abstinence attempt ($n=2169$), 72.2% recalled experiencing at least one withdrawal-like symptom upon cessation (Dwulit & Rzymiski, 2019). The most commonly endorsed symptoms were erotic dreams (53.5%), irritability (26.4%) and attention disturbance

(26.0%). Moreover, a recent qualitative study that analyzed abstinence journals of male members of an online pornography abstinence forum found that some members reported heightened negative affective states during abstinence, which some interpreted to possibly be withdrawal symptoms (Fernandez et al., 2021). The most commonly self-perceived withdrawal-like symptoms included depression, mood swings, anxiety, 'brain fog,' fatigue, headache, insomnia, restlessness, loneliness, frustration, irritability, stress and decreased motivation. These reports suggest that the possible existence of a pornography withdrawal syndrome warrants further investigation.

Second, the presence or absence of withdrawal-related symptoms in relation to PPU will inform appropriate classification of the disorder. It is worth noting that withdrawal is not considered a main component of addiction in all definitions of addiction (see, for example, Sussman & Sussman, 2011) and some scholars in the field have argued against including withdrawal in the conceptualization of behavioral addictions (e.g., Starcevic, 2016).¹ There has also been a lack of expert consensus about the clinical relevance of withdrawal for specific behavioral addictions such as gaming disorder (Castro-Calvo et al., 2021), and withdrawal has notably not been included as a diagnostic criterion for either gaming disorder or CSBD in the ICD-11. Nonetheless, withdrawal remains an important part of key existing nosological and theoretical conceptualizations of behavioral addictions in the field. For example, withdrawal is listed as a diagnostic criterion in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5), for the first officially recognized behavioral addiction, gambling disorder (American Psychiatric Association, 2013). Furthermore, in Griffiths' (2005) aforementioned components model of addiction, withdrawal is one of six components that need to be present before a behavior can be diagnosed as an addiction. In sum, while withdrawal may not be necessary component of addiction in all models, the presence of withdrawal symptoms would provide additional support for potentially characterizing PPU as an addictive disorder depending on how addiction is operationalized.

Third, withdrawal is already an important component of existing theoretical conceptualizations of PPU within the empirical literature. A recent systematic review of PPU psychometric instruments found that items assessing withdrawal

were included in nine of 22 instruments reviewed (Fernandez & Griffiths, 2021). One of these instruments, the Problematic Pornography Consumption Scale (PPCS; Bőthe et al., 2018, 2021b), was constructed based on Griffiths' (2005) framework and has become a widely used measure in PPU research. Recent studies on the PPCS using network analysis have found withdrawal to be one of the central symptoms of PPU in an online sample of Hungarian men (Bőthe et al., 2020a) and the most crucial symptom of PPU among three separate samples (i.e., two community samples of Hungarian and Chinese men, and a subclinical sample of Chinese men—Chen et al., 2021). This suggests that withdrawal is a key component in the theoretical conceptualization of PPU and merits greater research attention.

Finally, it is worth acknowledging that negative psychological effects of abstinence may not necessarily be interpreted within an addiction framework as withdrawal symptoms. For example, heightened negative affect during abstinence could instead reflect normal, non-pathological reactions to sexual deprivation (Castro-Calvo et al., 2022) or a disruption of routine particularly if abstinence is involuntary or not intrinsically motivated (King et al., 2016; Szabo, 1995). Alternatively, anxiety-related effects during abstinence could be interpreted within an obsessive–compulsive framework as a consequence of being prevented from engaging in the compulsive behavior to relieve anxiety-evoking obsessive thoughts (Coleman, 1990). However, irrespective of the specific theoretical interpretation of negative abstinence effects, understanding the types of adverse reactions typically experienced by pornography users during abstinence would still be useful from a clinical standpoint as these symptoms can then become potential treatment targets in PPU interventions (Bőthe et al., 2020a).

Methodological Limitations of Problematic Pornography Use Withdrawal Studies

To date, studies investigating withdrawal in PPU have methodological limitations that make them less than ideal for determining whether actual withdrawal symptoms manifest during periods of abstinence. Retrospective reports of negative abstinence effects during prior abstinence attempts as reported in cross-sectional surveys (e.g., Dwulit & Rzymiski, 2019) are subject to recall bias (Hughes, 2007b). PPU self-report instruments that have included withdrawal items (e.g., "I became agitated when I was unable to watch porn" in the PPCS; Bőthe et al., 2018) are inherently limited if respondents typically have unrestricted access to pornography and/or never try to abstain from pornography because withdrawal symptoms, by definition, only arise under abstinence conditions (Fernandez et al., 2020; Kaptsis et al., 2016b).

Therefore, in order to properly investigate the potential manifestation of withdrawal, prospective studies of

¹ Primary reasons cited include: (1) withdrawal not being necessary for the diagnosis of addiction more broadly (as the cessation of some substances does not produce a withdrawal syndrome—Starcevic, 2016) and (2) methodological weaknesses in the assessment of withdrawal in behavioral addictions (e.g., relying on individuals' subjective complaints of feeling irritable instead of psychophysiological measurement) has meant that the evidence base supporting the existence of behavioral addiction withdrawal syndromes has been argued to be weak (Kardefelt-Winther et al., 2017; Pies, 2009; van Rooij & Prause, 2014).

abstinence effects, preferably using intensive longitudinal methods such as ecological momentary assessment or daily diaries, are needed (Fernandez et al., 2020). Apart from observing naturally occurring abstinence situations (e.g., intrinsic quit attempts), abstinence from pornography can be experimentally manipulated to examine its effects. To date, three studies have experimentally manipulated pornography abstinence, but these have focused on its effects on relationship commitment (Lambert et al., 2012), delay discounting (Negash et al., 2016) and perceived compulsivity (Fernandez et al., 2017) rather than withdrawal-related symptoms.

The Present Study

To address the aforementioned gaps in the literature, the present study used a randomized controlled trial (RCT) design to examine effects of a 7-day experimentally manipulated pornography abstinence period on withdrawal-related symptoms among regular pornography users. A 7-day abstinence period was chosen on the basis that the onset and peak of most substance withdrawal syndromes typically occur within the first 7 days of abstinence (Budney et al., 2003, Hughes et al., 1994, McGregor et al., 2005, Shmulewitz et al., 2015). Therefore, it can be reasonably extrapolated that withdrawal symptoms of potential behavioral addictions (if any exist) are also likely to begin manifesting within the first 7 days of abstinence. Participants were randomly assigned to one of two conditions: (1) an abstinence group, where they were given instructions to try their best to abstain from pornography for 7 days, or (2) a control group, where they were told that they are free to use pornography as usual. Outcome measures were assessed at baseline the night before the start of the experimental period (retrospectively about the past 7 days) and each night of the experimental period using end-of-day online surveys.

Three potential manifestations of withdrawal-related symptoms were examined in the present study. First, craving for pornography was examined in light of findings from a recent systematic review that craving was the most common abstinence effect across multiple behaviors including gambling, gaming, mobile phone use and social media use (Fernandez et al., 2020). Therefore, it would be logical to examine whether craving is also an abstinence effect for pornography use. Second, positive and negative affect was examined because affective disturbances are common self-perceived withdrawal-like symptoms reported by pornography users (Dwulit & Rzymiski, 2019, Fernandez et al., 2021). Increased negative affect and/or decreased positive affect may be a possible manifestation of withdrawal, in line with previous prospective studies of abstinence from substances such as nicotine (e.g., Hughes, 2007a, Klemperer et al., 2021) and behaviors such as exercise (Fernandez et al., 2020). Third, *withdrawal symptoms* as assessed by an adaptation of the

Wisconsin Smoking Withdrawal Scale (Welsch et al., 1999) for pornography use were examined because retrospective survey and qualitative research has shown that the more commonly self-reported withdrawal-like symptoms by pornography users (i.e., depressed mood, irritability/frustration, anxiety and difficulty in concentrating—Dwulit & Rzymiski, 2019, Fernandez et al., 2021) overlap to a considerable extent with symptoms of cigarette-smoking withdrawal (Hughes, 2007a).

A non-clinical sample of regular pornography users was used instead of a clinical sample (e.g., treatment-seeking individuals) because withdrawal-like symptoms have been shown to manifest during abstinence from other behaviors (i.e., exercise, social media use, mobile phone use and gaming) even for regular users who have no apparent indication of problematic use (Fernandez et al., 2020). Several authors (e.g., Fernandez et al., 2020, Kaptis et al., 2016a) have also recommended against using clinical samples in abstinence studies until any possible negative abstinence effects are first understood in less complex populations. Nonetheless, within a non-clinical sample of regular users, it would be expected that those with higher self-reported levels of PPU would experience more pronounced negative abstinence effects, if any.

Taken together, the present study sought to answer the following two broad research questions: (1) Do negative abstinence effects (potentially indicative of withdrawal-related symptoms) manifest when regular pornography users try to abstain from pornography for a 7-day period? and (2) Do these negative abstinence effects only manifest (or manifest more strongly) for those with higher levels of PPU? If a pornography withdrawal syndrome were assumed to exist, the following hypotheses would be expected to be supported:

H₁ There are significant main effects of group (abstinence vs. control) on craving, positive affect, negative affect and withdrawal symptoms, controlling for baseline scores. More specifically, compared to the control group, the abstinence group are expected to score significantly higher on craving, negative affect and withdrawal symptoms, and significantly lower on positive affect.

H₂ There is a significant group \times PPU interaction on craving, positive affect, negative affect and withdrawal symptoms, controlling for baseline scores. More specifically, it is predicted that abstinence effects either (a) only manifest for those with higher PPU and not for those with lower PPU, or (b) manifest more strongly for those with higher PPU compared to those with lower PPU.

Method

Participants

Participants were psychology undergraduate students at a university in Malaysia. An a priori power analysis using the *pwr.f2.test* function in R determined that to detect an effect size of $f^2 = 0.06$ (Cohen's $d = 0.5$), assuming $\alpha = 0.05$, power = 0.8 and numerator degrees of freedom = 2, a sample size of 164 participants was required. Cohen's $d = 0.5$ was set as the smallest effect size of interest (Lakens, 2022) for the present study because it has been specified in the literature to be the smallest difference individuals are able to detect in health-related quality of life outcomes (Norman et al., 2003).

Eligibility criteria for participation included: (1) being at least 18 years old and (2) being a regular pornography user, operationally defined here as having watched pornography at least three times a week in the 4 weeks leading up to the study start date. While this definition of “regular” pornography use is arbitrary, it was reasoned that this minimum frequency was needed for a 7-day abstinence period to represent a significant enough deprivation of participants' weekly pornography use habits to be able to induce potential withdrawal symptoms. A custom definition of pornography adapted and modified from definitions found in the past literature (Grubbs et al., 2019a, McKee et al., 2020) was provided for participants as follows: “any sexually explicit films, video clips or pictures which intend to sexually arouse the viewer; this may be seen on the internet, in a magazine, in a book, or on television.” While males report higher rates of pornography use (e.g., Hald, 2006, Kvale et al., 2014, Regnerus et al., 2016) and PPU (e.g., Grubbs et al., 2019a, Kor et al., 2014) than females, there is no evidence to suggest that withdrawal symptoms, if any exist, would manifest only for male pornography users. Previous cross-sectional research found that both males and females recalled experiencing withdrawal-like symptoms during a past cessation attempt (Dwulit & Rzymiski, 2019). Therefore, there was no gender restriction for participating in the present study.

A total of 184 students signed up for the study and were assessed for eligibility through their responses to questions on the baseline survey. Eight participants were excluded at this stage because they did not meet the requirement of being a regular pornography user. A total of 176 participants were randomized, resulting in 86 participants allocated to the abstinence group and 90 participants allocated to the control group. No participants failed to complete any daily survey post-randomization (144 completed all seven surveys, 23 completed six surveys, six completed five surveys, two completed four surveys, and one completed three surveys).

Daily survey completion rate across the 7 days ranged from 92.2% to 100.0%. An intention-to-treat strategy (Gupta, 2011) to the analysis was applied. Therefore, all randomized participants were retained for data analysis. The final sample comprised 176 participants (64.2% female, 34.7% male, 1.1% agender, $M_{\text{age}} = 21.38$ years, $SD = 1.50$). Figure 1 depicts a Consolidated Standards of Reporting Trials (CONSORT) flow chart detailing the flow of participants through each stage of the study.

Baseline characteristics of the sample are presented in Table S1 in Supplementary Material. At baseline, 48.9% of participants reported desire to reduce but not completely quit their pornography use, 40.9% of participants reported no desire to reduce nor quit their pornography use, and 10.2% reported desire to completely quit their pornography use. In line with CONSORT best practice recommendations for RCTs (Altman et al., 2001), significance tests of baseline differences between the groups were not conducted as due to the randomization procedure, any potential observed baseline differences would be attributable to chance (de Boer et al., 2015, Harvey, 2018).

It is important to highlight that Malaysia, where the present study was conducted, is a sexually conservative country with restrictive laws regulating pornography use (e.g., access to pornographic websites is blocked by the government) and with religious and cultural values that may influence perception of pornography use as immoral or a sin (Goh et al., 2019, Tan et al., 2022). Despite this conservatism, empirical research has shown that pornography use is not uncommon among university students in Malaysia (Ali et al., 2021). Of note, it appears that most participants in the present sample had relatively liberal attitudes toward pornography use as indicated by the low rate of agreement in the baseline survey with the statement “I believe that pornography use is morally wrong” (i.e., 67.6% disagreed at least to some extent, 18.2% neither agreed nor disagreed, and only 14.2% agreed at least to some extent). Nonetheless, due to the conservative socio-cultural context, the possibility of additional self-selection bias and social desirability bias (potentially leading to under-reporting of pornography use and sexual behaviors) among participants needs to be acknowledged.

Procedure

The study was advertised to prospective participants as “The pornography abstinence experiment: An 8-day daily diary study of regular pornography users.” Participants were informed that the purpose of the study would be to track the daily experiences of regular pornography users who will be randomly assigned either to an “abstinence” group or a

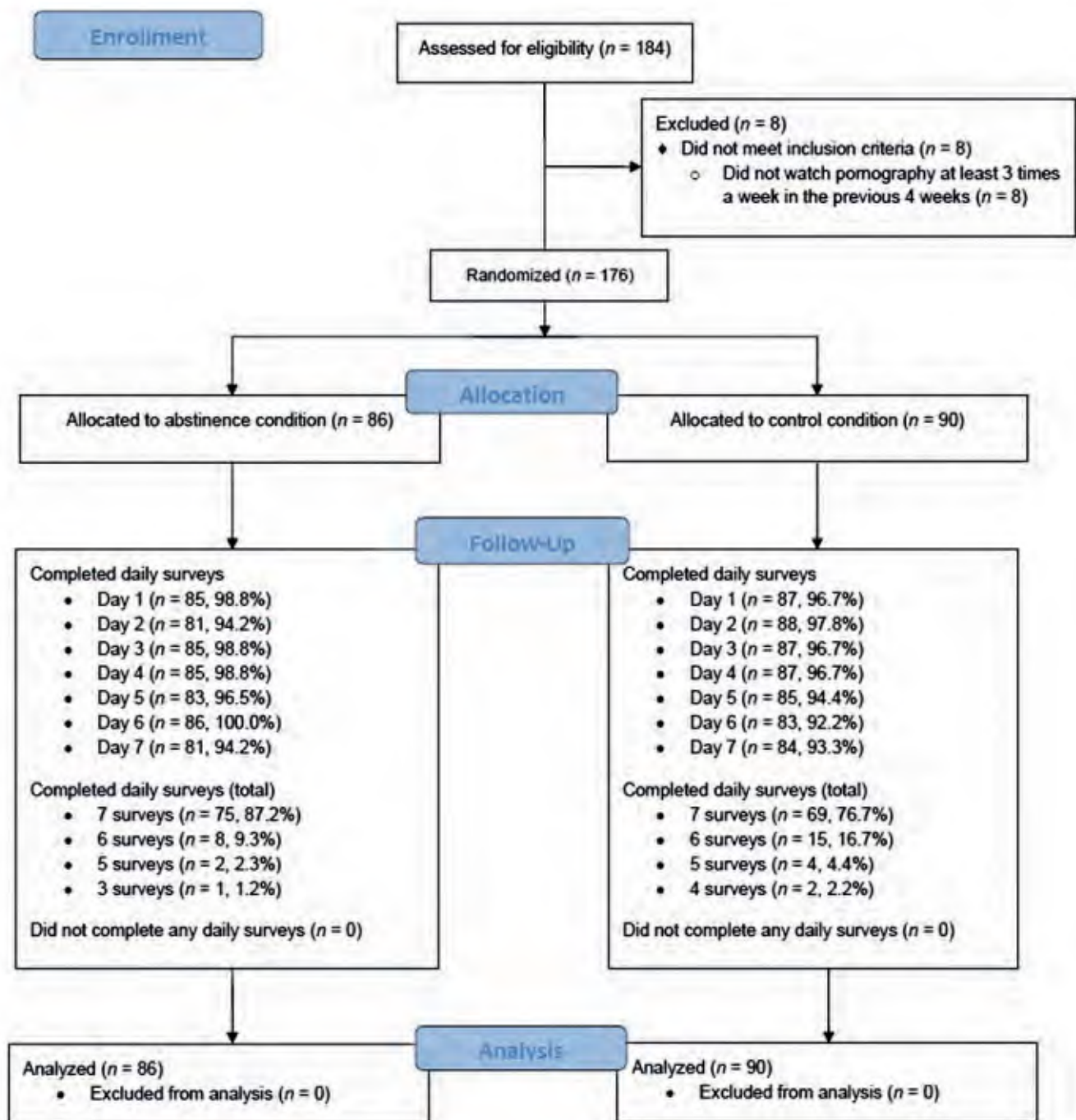
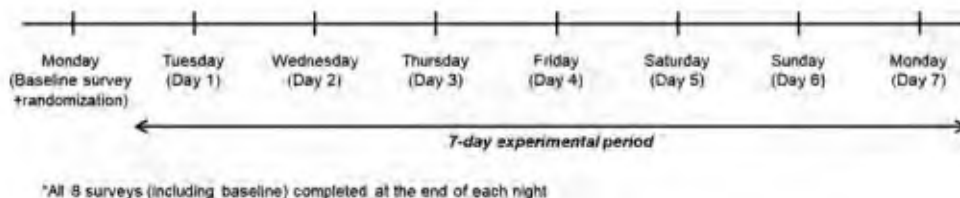


Fig. 1 CONSORT flow diagram

“no abstinence” group.² Three separate 8-day sessions of the study were conducted over the course of 2 months in 2021 (one in February and two in March). All three sessions began on a Monday and ended on the following Monday (see Fig. 2). Participants were required to complete a daily survey each night during the 8-day period (including the baseline survey on the first Monday). At 8.00 pm each night of the

8-day period, online *Qualtrics* survey links were emailed to participants. Participants were asked to complete the surveys

² Prospective participants were informed about the nature of the random assignment from the outset because a willingness to attempt abstinence from pornography if assigned to the abstinence group was necessary for participation. While this may have led to demand characteristics, it was deemed unethical to withhold this information from prospective participants.

Fig. 2 Timeline of the 8-day study period

at the end of their day, as close as possible before they went to bed. The survey links expired at 5.00 am the next morning to ensure that participants did not complete the surveys after waking.

After completing the baseline survey, participants were randomly allocated to the abstinence and control groups by the *Qualtrics* randomizer function, which was set to assign a roughly equal number of participants to each condition³. Participants in the abstinence group received instructions to try their best to abstain from pornography for the next 7 days, starting from 5.00 am the next morning (Tuesday) to 5.00 am the following Tuesday morning (exactly 7 days). Participants were told that if they did watch pornography during this period, to report it honestly during the daily surveys, and that it would not have an effect on any compensation they were entitled to receive. They were also told that they were allowed to masturbate without pornography or engage in any other non-pornography-related sexual activity during this period. The control group were told that they were free to watch pornography as usual for the next 7 days (see Appendix A in Supplementary Material for full instructions provided to the abstinence and control groups).

As compensation, participants received course credit if they completed at least six of the seven surveys during the experimental period, and in addition received a gift voucher worth MYR 30.00 (approximately 7.00 USD) if they completed all seven surveys. Informed consent was obtained from all participants, and all study procedures were approved by the research team's university ethics committees.

Measures

All measures used in the present study are provided in their full form in Appendix B in Supplementary Material and are summarized below.

³ Because the control group had been randomly allocated one or two participants more than the abstinence group in all three surveys corresponding to the three study sessions (i.e., February session [67 vs. 65], first March session [16 vs. 15], second March session [7 vs. 6]), this added up to a slightly higher total number of participants in the control group than the abstinence group (90 vs. 86).

Daily Measures

Daily frequency and/or duration of sexual behavior During each daily survey, five items asked about the frequency and/or duration of sexual behaviors participants engaged in during two separate time windows: (1) after completing last night's survey and before going to bed and (2) since waking up that day. This was to ensure that any sexual behavior engaged in after each nightly survey was also accounted for. For all five items, daily totals were computed by summing the frequency/duration reported about both time frames that made up one full day: (1) since waking up that day and (2) after completing that night's survey and before going to bed (reported on the following day's survey). These five items are summarized as follows:

Daily frequency of pornography use (FPU) Two free response items asked participants to report how many times they had (1) watched pornography without masturbating and (2) watched pornography while masturbating, respectively. Daily FPU was computed by summing the frequencies reported on both items.

Daily duration of pornography use A third free response item asked participants to report (in minutes) how much time in total they had spent watching pornography.

Daily frequency of masturbation without pornography A fourth free response item asked participants to report how many times they had masturbated without watching pornography.

Daily frequency of alternative sexual activity A fifth free response item asked participants to report how many times they had engaged in any sexual activity other than pornography use or masturbation (e.g., oral sex, intercourse).

Daily abstinence effort Daily abstinence effort was assessed using a single item adapted from a previous pornography abstinence study (Fernandez et al., 2017) that asked participants to rate the extent to which they were trying their best to abstain from pornography use since waking up that day, on a 10-point scale (0 = "I did not try at all" to 10 = "I tried my best").

Daily craving Daily craving was assessed using a modified four-item version of the five-item Penn Alcohol Craving Scale (PACS; Flannery et al., 1999), adapted for pornography

use.⁴ Four PACS items were modified to refer to pornography use instead of alcohol and asked participants to rate their craving for pornography since waking up that day in terms of frequency of thoughts about pornography, intensity of craving at its strongest point, difficulty in resisting pornography and average craving since waking. A fifth item from the original PACS assessing the duration of thoughts of alcohol was excluded on the basis that it would be challenging for participants to distinguish craving frequency from craving duration when reporting on a 24-h period (Hallgren et al., 2018). Responses were indicated on a seven-point scale, with response options differing according to each item. The scale demonstrated excellent internal consistency across all time points ($\alpha = 0.90\text{--}0.97$).

Daily positive and negative affect Daily positive and negative affect was assessed using the 10-item International Positive and Negative Affect Schedule-Short Form (I-PANAS-SF; Thompson, 2007). The I-PANAS-SF comprises two five-item subscales, positive affect and negative affect, which are each composed of a list of adjectives describing positive (e.g., “inspired”) and negative (e.g., “upset”) affective states, respectively. Participants rated the extent to which they felt these affective states since waking up that day on a five-point scale (1 = “very slightly or not at all” to 5 = “extremely”). Internal consistency was very good across all time points for both positive affect ($\alpha = 0.80\text{--}0.88$) and negative affect ($\alpha = 0.80\text{--}0.86$) subscales.

Daily withdrawal symptoms Daily withdrawal symptoms were assessed using a modified 14-item version of the 28-item Wisconsin Smoking Withdrawal Scale (WSWS; Welsch et al., 1999), adapted for pornography use. The 28 original WSWS items are divided into seven subscales (anger, anxiety, concentration, craving, hunger, sadness and sleep). Only items from four of the subscales (anger, anxiety, concentration and sadness) were retained as these mapped onto the more commonly self-reported categories of withdrawal-like symptoms in previous pornography studies (i.e., irritability/frustration, anxiety, difficulty in concentrating and depressed mood; Dwulit & Rzymiski, 2019; Fernandez et al., 2021). The modified scale comprised 14 items which were composed of statements describing specific symptoms (e.g., “It has been difficult to think clearly”). Participants rated their agreement with these statements on a five-point scale (0 = “strongly disagree” to 4 = “strongly agree”) based on how they felt in general since waking up that day. A composite score was computed based on the mean score of all the items. The scale demonstrated excellent internal consistency across all time points ($\alpha = 0.91\text{--}0.93$).

Baseline Measures

Demographic information Participants reported demographic information at baseline, including gender, age, sexual orientation, relationship status and nationality.

Past 4-week frequency of pornography use (FPU) One item assessed participants’ FPU over the previous 4 weeks on a seven-point scale (0 = “less than 3 times a week on average” to 6 = “more than once a day on average”).

Past 4-week average duration of pornography use per session One item assessed participants’ average duration of pornography use per session over the previous 4 weeks on a 10-point scale (1 = “5 min or less” to 10 = “3 h or more”).

Past 4-week frequency of masturbation without pornography One item assessed participants’ frequency of masturbation without pornography over the past 4 weeks on a six-point scale (1 = “never” to 6 = “about 7 or more times a week on average”).

Past 4-week percentage of pornography use accompanied by masturbation One item asked participants to estimate what percentage (from 0 to 100) of all their pornography watching sessions in the past 4 weeks was accompanied by masturbation.

Past 7-day frequency of pornography use (FPU) Two free response items asked how many times over the past 7 days participants had (1) watched pornography without masturbating and (2) watched pornography while masturbating, respectively. Past 7-day FPU was computed by summing the frequencies reported on both items.

Past 7-day duration of pornography use Past 7-day duration of pornography use was assessed by one free response item that asked participants to report how much time in total (in minutes) they watched pornography over the past 7 days.

Baseline abstinence effort (past 7 days) Baseline abstinence effort was assessed using the same single item used to assess daily abstinence effort, but asked participants to rate the extent to which they were trying their best to abstain from pornography use over the past 7 days.

Baseline craving (past 7 days) Baseline craving was assessed using the same four PACS items used to assess daily craving, but asked participants to rate their craving for pornography during the previous 7 days. The scale demonstrated very good internal consistency ($\alpha = 0.81$).

Baseline positive and negative affect (past 7 days) Baseline positive and negative affect was assessed using the 10-item I-PANAS-SF, but asked participants to rate their positive and negative affect during the past 7 days. Internal consistency was fair for both positive affect ($\alpha = 0.77$) and negative affect ($\alpha = 0.77$) subscales.

Baseline withdrawal symptoms (past 7 days) Baseline withdrawal symptoms were assessed using the same modified 14-item WSWS used to assess daily withdrawal symptoms, but asked participants to rate their withdrawal symptoms

⁴ The PACS has also been adapted as a measure of gaming withdrawal symptomatology in previous gaming abstinence studies (Evans et al., 2018; Katpsis et al., 2016a)

during the past 7 days. The scale demonstrated very good internal consistency ($\alpha = 0.89$).

Problematic pornography use (PPU) PPU was assessed using the 18-item Problematic Pornography Consumption Scale (PPCS; B  the et al., 2018) ($\alpha = 0.92$). PPCS assesses past 6-month PPU covering six factors: salience, tolerance, mood modification, withdrawal, relapse and conflict (Griffiths, 2005) on a seven-point scale (1 = “never” to 7 = “all the time”). Higher scores indicate greater problematic pornography consumption.

Intrinsic desire to quit or reduce pornography use One item assessed whether or not participants intrinsically desired to quit or reduce their pornography use at the time of the baseline survey. Participants indicated their agreement with one of the following three response options: “I want to reduce my pornography use, but I don’t want to completely quit/stop using pornography,” “I want to completely quit/stop using pornography” or “I have no desire to reduce or completely quit/stop using pornography.”

Moral disapproval of pornography Moral disapproval of pornography was assessed using the single item “I believe that pornography use is morally wrong” used in previous studies (Grubbs et al., 2019a) rated on a seven-point scale (1 = “strongly disagree” to 7 = “strongly agree”).

Validity of Outcome Measures

Since the outcome measures used in the present study (four-item PACS adapted for pornography use, I-PANAS-SF and 14-item WSWs adapted for pornography use) were not developed for the purpose of assessing pornography withdrawal-related symptoms, their structural and construct validity were briefly examined. First, confirmatory factor analyses were conducted on each baseline outcome measure to examine their factor structure in the present sample. Second, associations of the outcome measures with each other and with pornography use variables at baseline were examined to assess their convergent and discriminant validity. Results of these analyses are reported in detail in Appendix C and Tables S2–S5 in Supplementary Material. Overall, the outcome measures appeared to demonstrate adequate structural and construct validity for the purposes of the present study.

Attention Check Measures

To screen for inattentive responding and to encourage attentive responding, attention check items (i.e., “Please select [specific answer] to this question”; Shamon & Berning, 2020) were embedded in the surveys (one in the baseline survey and two in each daily survey). If participants selected the wrong answer on these items, they were alerted with a pop-up message encouraging them to remain attentive throughout the rest of the survey.

Data Analysis

Prior to conducting any substantive analyses, the dataset was screened for careless responding based on several criteria typically used in online survey research. First, examination of responses to the attention check items showed that all participants passed more than half of all attention checks, with 95% of the sample having an attention check pass rate of $\geq 88\%$. Second, an examination of response time per item indicated that there were no participants who completed any of the surveys too quickly (i.e., quicker than two seconds per item—Huang et al., 2012). Third, long-string analysis indicated that two participants appeared to engage in invariant responding on one of the scales in one of the daily surveys (i.e., providing a string of consistent responses on more than half of the scale—Curran, 2016). However, these two participants had a 100% attention check pass rate across all the surveys. Therefore, when considered together, none of the participants were flagged for careless responding.

All analyses were performed within the R environment (R Core Team, 2021). Due to the nested nature of the data (daily measures [level 1] nested within participants [level 2]) multilevel modeling (MLM) was utilized to examine group differences. Multilevel models model all available data from all participants regardless of missing observations and as such are robust to missing data. MLM is consistent with the intent-to-treat approach as all participants are retained in the analysis (listwise deletion is not required).

Models with continuous data (e.g., craving) were fit using the *lmer()* function in the *lme4* package (Bates et al., 2015) with restricted maximum likelihood (REML) estimation. The *p*-values were estimated with the *lmerTest* package using Satterthwaite’s degrees of freedom method (Kuznetsova et al., 2017). These models were checked to verify that they met assumptions of linearity, homoscedasticity and normality using a residuals versus fitted values plot, a scale location plot and a normal probability plot, respectively. The plots indicated that these assumptions were met for all models, except for the negative affect model, which indicated deviation from normality. Negative affect was log-transformed to reduce skewness and approximated a normal distribution after transformation. Models with count data (e.g., FPU) were fit using the *glmer()* function in the *lme4* package using a Poisson distribution, while the model with ordinal data (i.e., abstinence effort) was fit using the *clmm()* function from the *ordinal* package (Christensen, 2019).

For all models, the maximal random effects structure (Barr et al., 2013) was used, with a random intercept for participant and a random slope for time (i.e., Time | Participant), which allowed each participant to have their own intercept and slope across time (days). Where models failed to converge while using the default optimizer in *lme4*, models were refit with

all available optimizers (Bates et al., 2015). If models converged and produced similar results while using the other optimizers, the non-convergence warnings were regarded as false positives and an alternative optimizer was used instead. If models still failed to converge while using the other optimizers, the random effects structure was simplified to 1 | Participant (by removing the random slope term) to facilitate model convergence.⁵

For all confirmatory and exploratory analyses,⁶ all predictors and interactions were first entered into an initial “full” model. Using a backward elimination procedure, reduced models were specified by removing nonsignificant predictors. At each step, the more parsimonious model was compared to the previous model using the *anova()* function, which computes χ^2 statistics representing the differences in deviance between the two models with corresponding *p*-values based on likelihood ratio test comparisons (Bates et al., 2015). This process was repeated until the best-fitting model was identified for each separate outcome measure. The baseline score of each outcome measure,⁷ frequency of masturbation without pornography and frequency of alternative sexual activity were controlled for as covariates in all confirmatory and exploratory models. Given the relatively broad definition of regular pornography use in the present study (\geq three times a week), past 4-week FPU was also included as a covariate in all confirmatory models. Results of key best-fitting models are presented in Tables 1 and 2 in Results section, while all model fit and comparison statistics are presented in Tables S8–9, S11–12 and S15–16 in supplementary material.

Effect sizes of individual fixed effects were determined by computing the semi-partial R^2 statistic (Jaeger et al., 2017) through the *r2beta* function in the *r2glmm* package (Jaeger, 2017) using the Kenward–Roger approach. The semi-partial R^2 statistic represents the unique proportion of variance explained by each individual predictor in the model, above and beyond the variance explained by all other predictors in the model. Wherever a final model included a significant interaction, post hoc analyses were conducted to clarify the

nature of the interaction using the *emmeans* package (Lenth, 2021). The *emmeans* function was used to compute estimated marginal means and conduct pairwise comparisons of interest, while the *emmip* function was used to create interaction plots using estimated marginal means.

Results

Manipulation Check Analyses

To determine whether participants in the abstinence group adhered to instructions to try their best to abstain from pornography during the experimental period, group differences in abstinence effort, FPU and duration of pornography use during the experimental period were examined (see Table S6 in Supplementary Material). The abstinence group reported significantly greater daily abstinence effort ($M = 4.72$, $SD = 3.77$) compared to the control group ($M = 0.96$, $SD = 2.39$), controlling for past 7-day abstinence effort (odds ratio = 0.01, $z = -9.37$, $p < 0.001$). The abstinence group also reported significantly lower daily FPU ($M = 0.27$, $SD = 0.80$) compared to the control group ($M = 0.93$, $SD = 1.04$), controlling for past 7-day FPU (incidence rate ratio [IRR] = 4.95, $z = 9.38$, $p < 0.001$). The abstinence group also reported significantly lower daily duration (in minutes) of pornography use ($M = 4.25$, $SD = 15.30$) compared to the control group ($M = 16.91$, $SD = 23.05$), controlling for past 7-day duration of pornography use ($b = 12.70$, $t[171.76] = 6.97$, $p < 0.001$). Taken together, these group differences indicate that the abstinence instructions were effective at inducing attempts to abstain from pornography in the abstinence group during the experimental period.

While the majority of participants in the abstinence group ($n = 47/86$; 54.65%) did not report any pornography use at all during the experimental period, a considerable proportion of participants ($n = 39/86$; 45.35%) reported using pornography at least once during this period. More specifically, seven participants (8.14%) reported using pornography once, eleven (12.79%) reported using pornography twice, nine reported using pornography three times (10.47%) and twelve (13.95%) reported using pornography four or more times. For these participants, pornography use during the experimental period might be indicative of two possibilities: (1) a lack of adherence to instructions to try their best to abstain from pornography and/or (2) a failure to abstain from pornography despite attempting to do so (i.e., a “lapse”). These participants were not excluded from the analyses for two reasons. First, the intention-to-treat principle states that all randomized participants should be included in analyses according to their originally assigned condition, regardless of protocol adherence in order to maintain comparability between groups obtained through randomization and minimize the risk of

⁵ Specific models that had non-convergence issues and how these were addressed are detailed in Tables S6, S11 and S15.

⁶ Confirmatory analyses refer to analyses that tested the present study's a priori hypotheses, while exploratory analyses refer to analyses that did not test a priori hypotheses but were conducted in a post-hoc, exploratory capacity.

⁷ Because the baseline score of each outcome measure represented a retrospective estimation of how participants felt in general over the past seven days, whether daily scores increased or decreased relative to baseline was not examined. The tendency for individuals to overestimate the intensity of positive and negative affect when recalling past affect is a robust finding in the literature (Ben-Zeev et al., 2009; Kardum & Daskijević, 2001; Thomas & Diener, 1990). Therefore, the baseline scores would be expected to be inflated relative to the daily scores and as such were only controlled for as covariates.

Table 1 Multilevel model results for all outcome variables in confirmatory analyses

Outcome variable	Fixed effect	Estimate (SE)	df	t	p	95% CI	Semi-partial R^2
Craving	Intercept	0.48 (0.97)	169.57	0.49	0.626	−1.43–2.38	
	Group	−0.34 (0.50)	165.38	−0.68	0.498	−1.32–0.64	0.003
	PPU	0.09 (0.02)	164.16	4.45	< 0.001	0.05–0.13	0.108
	Baseline craving	0.08 (0.10)	162.89	0.85	0.394	−0.11–0.27	0.004
	Past 4-week FPU	0.28 (0.16)	171.74	1.67	0.096	−0.05–0.60	0.016
	Frequency of masturbation without pornography	0.46 (0.30)	937.60	1.53	0.127	−0.13–1.04	0.002
	Frequency of alternative sexual activity	−0.33 (0.34)	1008.16	−0.97	0.334	−0.99–0.34	0.001
	Time	−0.06 (0.07)	169.49	−0.86	0.392	−0.21–0.08	0.004
Positive affect	Intercept	4.92 (0.96)	177.57	5.10	< 0.001	3.03–6.81	
	Group	−0.34 (0.40)	170.18	−0.85	0.396	−1.13–0.45	0.004
	Baseline positive affect	0.59 (0.05)	172.79	10.83	< 0.001	0.48–0.69	0.405
	Past 4-week FPU	−0.03 (0.12)	174.38	−0.21	0.832	−0.27–0.22	0.000
	Frequency of masturbation without pornography	−0.23 (0.21)	1042.37	−1.13	0.260	−0.64–0.17	0.001
	Frequency of alternative sexual activity	0.20 (0.23)	979.97	0.86	0.389	−0.25–0.64	0.001
	Time	0.07 (0.05)	168.00	1.37	0.172	−0.03–0.17	0.011
	Time	0.07 (0.05)	168.00	1.37	0.172	−0.03–0.17	0.011
Negative affect ^a	Intercept	1.49 (0.08)	172.69	18.19	< 0.001	1.33–1.65	
	Group	0.00 (0.04)	165.79	0.12	0.906	−0.07–0.08	0.000
	Baseline negative affect	0.05 (0.00)	166.29	11.56	< 0.001	0.04–0.06	0.445
	Past 4-week FPU	0.01 (0.01)	168.72	0.80	0.425	−0.01–0.03	0.004
	Frequency of masturbation without pornography	−0.00 (0.02)	1062.73	−0.19	0.850	−0.04–0.03	0.000
	Frequency of alternative sexual activity	0.02 (0.02)	975.31	0.94	0.347	−0.02–0.06	0.001
	Time	−0.01 (0.00)	167.64	−2.68	0.008	−0.02 to −0.00	0.041
	Time	−0.01 (0.00)	167.64	−2.68	0.008	−0.02 to −0.00	0.041
Withdrawal symptoms	Intercept	0.35 (0.15)	167.19	2.18	0.031	0.03–0.66	
	Group	0.10 (0.07)	164.02	1.42	0.157	−0.04–0.24	0.012
	PPU	0.01 (0.00)	165.11	2.61	0.010	0.00–0.01	0.040
	Baseline withdrawal symptoms	0.58 (0.05)	169.21	11.40	< 0.001	0.48–0.68	0.434
	Past 4-week FPU	−0.02 (0.02)	168.35	−1.03	0.305	−0.07–0.02	0.006
	Frequency of masturbation without pornography	0.02 (0.04)	1023.51	0.56	0.576	−0.05–0.10	0.000
	Frequency of alternative sexual activity	−0.04 (0.04)	990.12	−0.86	0.389	−0.12–0.05	0.001
	Time	−0.03 (0.01)	172.70	−3.28	0.001	−0.05 to −0.01	0.061

^aLog-transformed. All models were random slope models with Time | Participant random effects. The best-fitting models are presented. *CI* confidence interval, *FPU* frequency of pornography use, *PPU* problematic pornography use, *SE* standard error

bias (Gupta, 2011). Second, the purpose of the abstinence instructions was to induce attempts at abstinence (which is within participants' control) and not necessarily the achievement of successful nonuse (which may not entirely be within all participants' control, given the difficulty that may come with trying to regulate habitual pornography use for 7 days). Lapses are common in real-world pornography abstinence attempts (Fernandez et al., 2021), and therefore, emphasizing attempted abstinence over successful nonuse may arguably have greater ecological validity. Furthermore, nicotine abstinence research has demonstrated that excluding participants who relapse from analyses may be counterproductive because

these participants are most likely to experience the greatest amount of withdrawal in the first place (see Hughes, 2007b, Piasecki, et al., 2003a, 2003b, Shiffman et al., 2004).

Confirmatory Analyses

Means and standard deviations for all study variables are presented in Table S7 in Supplementary Material.

Results of the MLM analyses (see Table 1) showed no statistically significant main effects of group on craving ($b = -0.34$, $t[165.38] = -0.68$, $p = 0.498$, semi-partial $R^2 = 0.003$), positive affect ($b = -0.34$, $t[170.18] = -0.85$,

Table 2 Multilevel model results for all outcome variables in exploratory analyses with past 4-week FPU as moderator

Outcome variable	Fixed effect	Estimate (<i>SE</i>)	<i>df</i>	<i>t</i>	<i>p</i>	95% CI	Semi-partial R^2
Craving	Intercept	5.41 (2.84)	160.01	1.90	0.059	−0.17–10.98	
	Group	−7.36 (3.61)	160.97	−2.04	0.043	−14.45 to −0.27	0.025
	PPU	−0.04 (0.05)	160.81	−0.78	0.437	−0.13–0.06	0.017
	Past 4-week FPU	−0.93 (0.79)	158.53	−1.17	0.244	−2.48–0.63	0.002
	Gender	0.44 (0.57)	160.82	0.77	0.445	−0.68–1.56	0.004
	Baseline craving	0.07 (0.09)	158.10	0.70	0.488	−0.12–0.25	0.003
	Frequency of masturbation without pornography	0.37 (0.30)	905.33	1.26	0.209	−0.21–0.96	0.002
	Frequency of alternative sexual activity	−0.37 (0.34)	997.84	−1.09	0.277	−1.03–0.30	0.001
	Time	−0.05 (0.07)	170.18	−0.68	0.496	−0.19–0.09	0.003
	Group × PPU	0.19 (0.06)	161.66	2.93	0.004	0.06–0.32	0.050
	Group × past 4-week FPU	1.22 (1.01)	160.69	1.21	0.228	−0.76–3.19	0.009
	PPU × past 4-week FPU	0.03 (0.01)	159.08	2.46	0.015	0.01–0.05	0.013
	Group × PPU × past 4-week FPU	−0.04 (0.02)	160.43	−2.30	0.023	−0.07 to −0.01	0.032
Positive affect	Intercept	4.65 (1.15)	171.94	4.03	< .0001	2.39–6.91	
	Group	−0.39 (0.41)	167.43	−0.95	0.342	−1.18–0.41	0.005
	Gender	0.13 (0.49)	167.14	0.26	0.795	−0.86–1.08	0.000
	Baseline positive affect	0.59 (0.05)	170.30	10.84	< 0.001	0.49–0.70	0.408
	Frequency of masturbation without pornography	−0.24 (0.21)	1032.06	−1.17	0.244	−0.65–0.16	0.001
	Frequency of alternative sexual activity	0.19 (0.23)	969.39	0.86	0.389	−0.25–0.64	0.001
	Past 4-week FPU	0.01 (0.14)	169.09	0.10	0.924	−0.27–0.29	0.000
	Time	0.07 (0.05)	167.82	1.28	0.201	−0.04–0.17	0.010
Negative affect ^a	Intercept	1.29 (0.10)	163.05	12.50	< 0.001	1.09–1.50	
	Group	0.01 (0.04)	160.87	0.34	0.736	−0.06–0.09	0.001
	PPU	0.00 (0.00)	161.39	2.09	0.039	0.00–0.00	0.026
	Past 4-week FPU	0.01 (0.01)	162.45	1.00	0.318	−0.01–0.04	0.006
	Gender	0.10 (0.05)	161.44	2.19	0.030	0.01–0.20	0.029
	Baseline negative affect	0.05 (0.00)	162.00	10.76	< 0.001	0.04–0.06	0.417
	Frequency of masturbation without pornography	−0.00 (0.02)	1046.72	−0.09	0.930	−0.04–0.04	0.000
	Frequency of alternative sexual activity	0.02 (0.02)	964.45	0.86	0.392	−0.02–0.06	0.001
Withdrawal symptoms	Time	−0.01 (0.00)	167.42	−2.61	0.010	−0.02 to −0.00	0.039
	Intercept	0.19 (0.18)	162.50	1.04	0.301	−0.17–0.55	
	Group	0.10 (0.07)	161.48	1.34	0.181	−0.04–0.24	0.011
	PPU	0.01 (0.00)	162.22	2.75	0.007	0.00–0.01	0.045
	Past 4-week FPU	−0.00 (0.03)	163.66	−0.15	0.885	−0.05–0.05	0.000
	Gender	0.15 (0.09)	161.93	1.75	0.082	−0.02–0.32	0.019
	Baseline withdrawal symptoms	0.57 (0.05)	166.33	10.81	< 0.001	0.46–0.67	0.413
	Frequency of masturbation without pornography	0.02 (0.04)	1014.50	0.64	0.521	−0.05–0.10	0.000
	Frequency of alternative sexual activity	−0.04 (0.04)	980.29	−0.94	0.347	−0.12–0.04	0.001
	Time	−0.03 (0.01)	166.64	−3.18	0.002	−0.05 to −0.01	0.057

^aLog-transformed. One participant in the abstinence group and one participant in the control group who identified as “agender” were excluded from these analyses, resulting in $N=174$. All models are random slope models with Time | Participant random effects. The best-fitting models are presented. *CI* confidence interval, *FPU* frequency of pornography use, *PPU* problematic pornography use, *SE* standard error

$p=0.396$, semi-partial $R^2=0.004$), negative affect ($b=0.00$, $t[165.79]=0.12$, $p=0.906$, semi-partial $R^2=0.000$) or withdrawal symptoms ($b=0.10$, $t[164.02]=1.42$, $p=0.157$,

semi-partial $R^2=0.012$), controlling for baseline scores, past 4-week FPU, frequency of masturbation without pornography and frequency of alternative sexual activity. This means

that contrary to H_1 , there were no significant differences between the abstinence and control groups on any of the outcome measures. The addition of a group \times PPU interaction term did not improve model fit (Tables S8–S9 in Supplementary Material) for the craving model ($\chi^2 = 1.35$, $p = 0.245$), positive affect model ($\chi^2 = 1.57$, $p = 0.210$), negative affect model ($\chi^2 = 0.59$, $p = 0.443$) or withdrawal symptoms model ($\chi^2 = 1.50$, $p = 0.220$). This means that contrary to H_2 , there was no significant interaction between group and PPU on any of the outcome measures. In sum, neither of the confirmatory hypotheses were supported.

Although not hypothesized a priori, MLM analyses showed a statistically significant main effect of time on both negative affect ($b = -0.01$, $t[167.64] = -2.68$, $p = 0.008$, semi-partial $R^2 = 0.041$) and withdrawal symptoms ($b = -0.03$, $t[172.70] = -3.28$, $p = 0.001$, semi-partial $R^2 = 0.061$), indicating a decrease in negative affect and withdrawal scores in both groups over the experimental period.

Exploratory Analyses

In considering the lack of support for the confirmatory hypotheses, it was noted that in terms of past 4-week FPU, the large majority of the sample reported using pornography three times a week or four times a week (61.4%), with fewer reporting five times a week or six times a week (19.3%) and once a day or more than once a day (19.3%). This appeared to be contributed to by the large proportion of female participants (64.2%) in the sample, most of whom reported past 4-week FPU of three times a week or four times a week (77.0%), with fewer reporting five times a week or six times a week (13.3%) and once a day or more than once a day (9.7%). This was in contrast to male participants, who had a roughly equal proportion of participants reporting past 4-week FPU of three times a week or four times a week (32.8%), five times a week or six times a week (31.1%) and once a day or more than once a day (36.1%). Examination of baseline characteristics of the sample by gender showed statistically significant gender differences, most notably male participants having significantly higher PPU ($F[1,172] = 9.027$, $p = 0.003$), craving ($F[1,172] = 7.168$, $p = 0.008$) and past 4-week FPU ($F[1,172] = 51.768$, $p < 0.001$) than female participants (see Table S10 in Supplementary Material for a complete summary of baseline characteristics by gender).

On the basis that abstinence effects might manifest only at higher levels of past 4-week FPU, exploratory MLM analyses were run on each outcome measure to account for potential moderating effects of past 4-week FPU. All variables in the confirmatory MLM models were retained, but with past 4-week FPU now specified as a moderator (i.e., three-way interaction [group \times PPU \times past 4-week FPU] or two-way interaction [group \times past 4-week FPU]; see Tables S11 and S12 in Supplementary Material)⁸ Given that there were

important gender differences in baseline characteristics, gender was controlled for as a covariate in these models. MLM results showed that past 4-week FPU played a significant moderating role in the craving model but not the positive affect, negative affect and withdrawal symptoms models (see Table 2)

In the craving model, there was a significant main effect of group ($b = -7.36$, $t[160.97] = -2.04$, $p = 0.043$, semi-partial $R^2 = 0.025$), a significant two-way group \times PPU interaction ($b = 0.19$, $t[161.66] = 2.93$, $p = 0.004$, semi-partial $R^2 = 0.050$) and a significant two-way PPU \times past 4-week FPU use interaction ($b = 0.03$, $t[159.08] = 2.46$, $p = 0.015$, semi-partial $R^2 = 0.013$). However, the main effect and two-way interactions were qualified by a significant three-way group \times PPU \times past 4-week FPU interaction ($b = -0.04$, $t[160.43] = -2.30$, $p = 0.023$, semi-partial $R^2 = 0.032$). To probe the pattern of this three-way interaction, contrasts between abstinence and control groups (see Table S13 in Supplementary Material) were examined at combinations of either high (+1 SD) or low (-1 SD) values on the PPCS and six values corresponding to all six response anchors on the past 4-week FPU item (1 = “3 times a week,” 2 = “4 times a week,” 3 = “5 times a week,” 4 = “6 times a week,” 5 = “once a day” and 6 = “more than once a day”). The plot of this interaction is presented in Fig. 3

At low levels of PPU, there were no significant differences between abstinence and control groups on craving at all levels of past 4-week FPU. However, at high levels of PPU, there were differential effects of group on craving depending on level of past 4-week FPU. More specifically, the control group had significantly higher craving than the abstinence group over the experimental period when PPU level was high and past 4-week FPU was “3 times a week” ($b = -3.38$, $t[163] = -3.04$, $p = 0.016$; abstinence group estimated marginal mean [EMM] = 6.19, SE = 0.77 vs. control group EMM = 9.57, SE = 0.90). On the contrary, the abstinence group had significantly higher craving than the control group over the experimental period when PPU level was high and past 4-week FPU was “once a day” ($b = 2.65$, $t[160] = 2.65$, $p = 0.036$; abstinence group EMM = 11.34, SE = 0.79 vs. control group EMM = 8.69, SE = 0.77) or when PPU level was high and past 4-week FPU was “more than once a day” ($b = 4.16$, $t[161] = 3.17$, $p = 0.016$; abstinence group EMM = 12.62, SE = 1.04 vs. control group EMM = 8.47, SE = 0.97). There were no significant differences between abstinence and control groups at high levels

⁸ All exploratory models in the present study followed the same backward elimination procedure as the confirmatory models, where more complex models were compared to reduced models until the best-fitting model was found for each outcome measure.

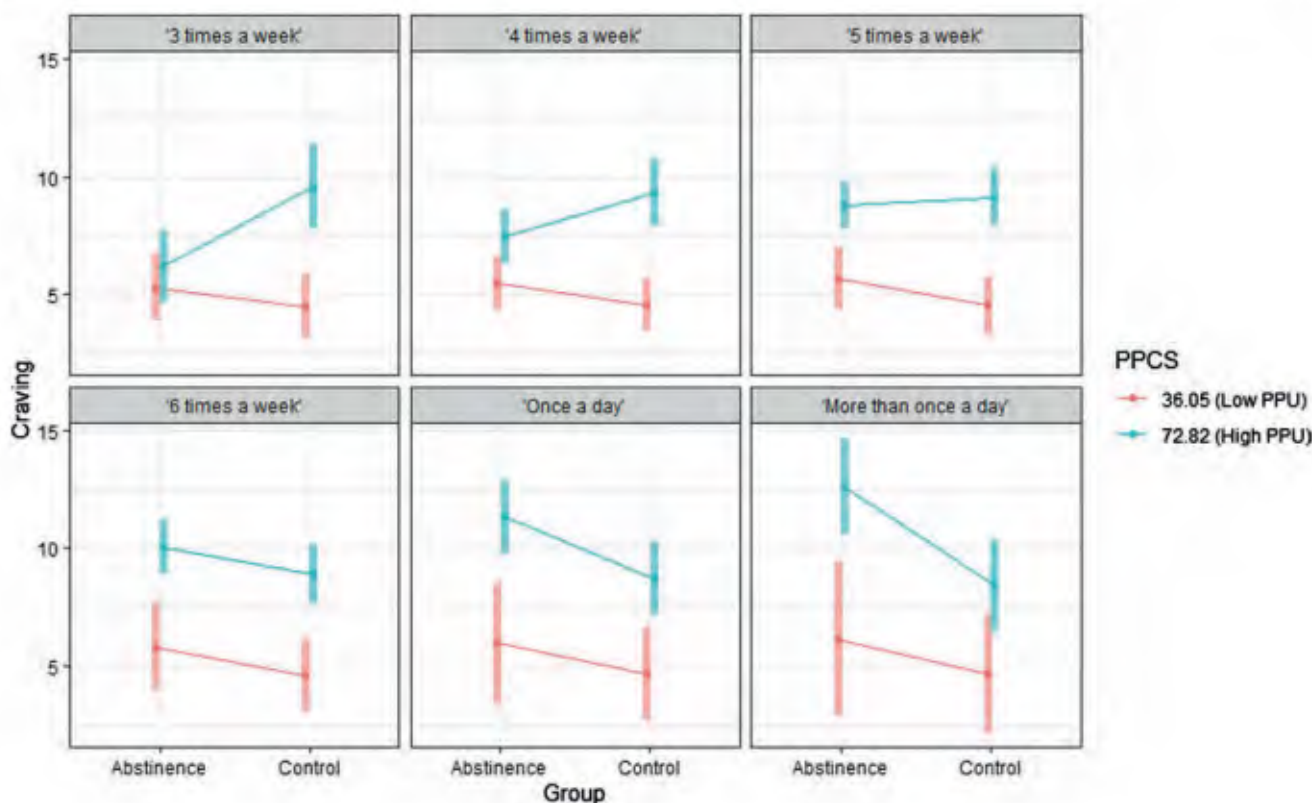


Fig. 3 Effect of group on craving by PPU level (± 1 SD) at all six levels of past 4-week FPU

of PPU and when past 4-week FPU was “4 times a week,” “5 times a week” or “6 times a week.”

Finally, at the request of a reviewer, a supplementary set of exploratory MLM analyses was run on each outcome measure to rule out the possibility that abstinence effects manifested only at specific time points (e.g., in the middle or toward the end) of the 7-day period. To achieve this, all variables in the previous exploratory MLM models were retained, but with time now specified as a moderator (i.e., three-way interaction [group \times PPU \times time] or two-way interaction [group \times time]; see Tables S14–S16 in Supplementary Material). In all models, both linear and quadratic time terms were specified, to allow for potential nonlinear trends. MLM results indicated no significant group \times PPU \times (linear/quadratic) time nor group \times (linear/quadratic) time interactions in any of the models, suggesting that there were no significant abstinence effects on any of the outcome variables at a specific time point of the 7-day period. Overall, it is important to emphasize that all exploratory analyses in the present study should be interpreted with caution given the limited statistical power in the present study’s sample to detect three-way interaction effects if any exist.

Discussion

The present study used a randomized controlled design to examine whether (1) negative abstinence effects potentially reflective of withdrawal-related symptoms manifest when regular pornography users (defined in the present study as having used pornography \geq three times a week in the past four weeks) try to abstain from pornography for a 7-day period and (2) these negative abstinence effects only manifest (or manifest more strongly) for those with higher levels of PPU.

Confirmatory Analyses

The results showed that both confirmatory hypotheses (H_1 and H_2) were not supported. Contrary to the first hypothesis, there were no significant main effects of group (abstinence vs. control) on craving, negative affect, positive affect or withdrawal symptoms during the experimental period, controlling for baseline scores. This indicates that when assessed prospectively in comparison with a non-abstaining control group, no evidence of withdrawal-related symptoms was found for the abstaining participants in this sample. This finding is in contrast to previous cross-sectional research relying

on retrospective self-report that found 72.2% of pornography users who had at least one past pornography abstinence attempt recalled experiencing at least one withdrawal-like symptom upon cessation (Dwulit & Rzymiski, 2019)

The second hypothesis that negative abstinence effects during the experimental period would only manifest (or manifest more strongly) for those with higher levels of PPU was also not supported, as there were no significant group \times PPU interaction effects on all outcome measures. Nonetheless, it is important to interpret this finding in light of the fact that because this was a non-clinical sample of regular pornography users, the range of scores on the PPCS was relatively low [$M = 54.72$, $SD = 18.60$, with only 15.3% of the sample having PPCS scores that met or exceeded the suggested clinical cutoff of ≥ 76 in Bøthe et al. (2018)]. This finding does not rule out the possibility that in a sample with higher levels of PPU, moderating effects of PPU might be observed.

An unexpected finding was that both negative affect and withdrawal symptoms decreased over the experimental period for both abstinence and control groups. This decrease appeared to be indicative of the “downward drift” phenomenon (see Gilbert et al., 2019, p. 538), which is the tendency for participants to report progressively fewer negative affect-related symptoms when tested repeatedly, regardless of assignment to treatment or control. This phenomenon has been observed in studies of abstinence from cigarette smoking (Gilbert et al., 2002) and gaming (Evans et al., 2018) and also non-abstinence-related studies (e.g., Sharpe & Gilbert, 1998). While multiple explanations have been proposed for the phenomenon (Arrindell, 2001, Sharpe & Gilbert, 1998), one plausible explanation is that repeated testing (in the present study, the daily surveys) acts as an intervention that facilitates self-monitoring of negative affect and possibly coping mechanisms to deal with the negative affect. This finding further underscores the importance of including a non-abstaining control group in future prospective abstinence studies, as decreases in negative affective symptoms over time by abstaining participants could easily be misattributed to abstinence.

Exploratory Analyses

Importantly, exploratory analyses provided partial support for the possibility that the null findings observed in the confirmatory analyses could have been the result of not accounting for the moderating effects of a third variable (i.e., past 4-week FPU). The majority of the sample (61.4%) reported past 4-week FPU on the lower end of the spectrum (i.e., three or four times a week), in large part contributed to by the large proportion of female participants in the sample (64.2%) most of whom also reported past 4-week FPU of three or four times a week (77.0%). Consistent with past research (Chen et al.,

2018, Grubbs et al., 2019c, Weinstein et al., 2015), female participants in this sample had lower baseline rates of FPU, PPU and craving than male participants. Therefore, the possibility that abstinence effects might only manifest at higher levels of FPU was examined in exploratory models with past 4-week FPU added as a moderator and gender controlled for as a covariate.

A significant three-way group \times PPU \times past 4-week FPU interaction on craving was found, but past 4-week FPU did not play a significant moderating role in the negative affect, positive affect and withdrawal symptoms models. At high levels of PPU ($+1$ SD), the control group had higher craving scores than the abstinence group over the experimental period when past 4-week FPU was “three times a week,” but inversely the abstinence group had higher craving scores than the control group over the experimental period when past 4-week FPU was “once a day” or “more than once a day.” Notably, this indicates that there was an abstinence effect on craving when PPU was high, but only once past 4-week FPU reached the threshold of daily use. It is noteworthy that this effect was found even though high PPU at $+1$ SD (i.e., $M = 72.82$) in this sample did not reach the clinical cutoff of ≥ 76 specified in Bøthe et al. (2018). This finding is similar to a previous cross-sectional survey of undergraduates in Canada that found an increase in addiction-related symptomatology once FPU reached the threshold of daily use (Harper & Hodgins, 2016). It is uncertain as to why the abstinence group reported significantly lower craving than the control group at high levels of PPU and past 4-week FPU of ‘three times a week,’ but one speculative explanation could be that abstaining participants below a specific threshold of FPU (i.e., three times a week) due to lower habit strength (Sirriani & Vishwanath, 2016) had enough self-regulation such that they were able to successfully implement strategies to regulate their experience of craving (e.g., prevent its occurrence or reduce its intensity whenever it did emerge) to help them achieve the abstinence goal.

There are two possible interpretations of the abstinence effect on craving under high PPU and high FPU conditions that are not necessarily mutually exclusive. First, if negative abstinence effects are interpreted within an addiction framework as withdrawal-related symptoms, then craving could potentially be a withdrawal symptom in PPU. High FPU on its own (without high PPU) may be indicative of preoccupation with pornography that may not be associated with negative life consequences (Bøthe et al., 2020a, 2020b), but the fact that craving manifested for those with daily or more FPU only when PPU was high reinforces the idea that abstinence-induced craving could be reflective of a dependency on pornography and potentially a withdrawal symptom (if a pornography withdrawal syndrome exists). This interpretation would be consistent with a finding from a recent systematic review that craving was the most common

abstinence effect across multiple potential behavioral addictions (Fernandez et al., 2020). Second, craving could also have been a manifestation of sexual desire and/or arousal during the experimental period. Because higher baseline rates of FPU could have to some extent been reflective of higher sexual drive (Leonhardt et al., 2021), the fact that craving only manifested for those with high PPU when FPU was daily or more supports the sexual desire explanation. If participants' primary sexual outlet was masturbating to pornography, then urges to use pornography could be a natural manifestation of sexual desire and/or arousal throughout the deprivation period (Castro-Calvo et al., 2022). The fact that an abstinence effect was found for craving and not the other outcome variables (i.e., positive affect, negative affect and withdrawal symptoms) further lends support to this non-pathological interpretation, because affect-related disturbances would arguably be expected to also be present if an actual withdrawal syndrome exists. At the same time, the lack of abstinence effects on these other outcome variables needs to be interpreted with caution because given the limited statistical power in the sample to detect three-way interaction effects, similar but smaller effects may not have been detected for these variables. Overall, all findings in these exploratory analyses should be interpreted with caution because of their post hoc exploratory nature and limited statistical power to detect effects of interest. While these exploratory findings are noteworthy, they should be regarded as hypothesis-generating for future studies.

Implications

In sum, the findings of the present study have two main implications for understanding the potential manifestation of withdrawal-related symptoms during pornography abstinence. First, confirmatory analyses showed that there was no evidence of negative abstinence effects (i.e., withdrawal-related symptoms) among a sample of pornography users who were using pornography at least three times a week, and this was not dependent on level of PPU (but with the caveat that the sample had relatively low levels of PPU). These null findings are important to emphasize as they provide preliminary evidence that the average regular pornography user who uses pornography somewhat regularly (i.e., a few times a week) generally does not experience withdrawal-like symptoms while trying to abstain from pornography for a 7-day period.

Second, exploratory findings raise the possibility that negative abstinence effects might manifest only when both baseline FPU and PPU are high—a hypothesis that needs to be tested in future prospective studies. Exploratory analyses found that craving was an abstinence effect when PPU was high, but only once past 4-week FPU was at least daily or more. This tentatively suggests that craving could potentially be a PPU withdrawal symptom if a pornography withdrawal

syndrome exists, but future adequately powered studies need to verify this finding *a priori* and rule out alternative theoretical explanations (e.g., craving being solely a manifestation of sexual arousal). While craving was the only significant abstinence effect under these conditions, it cannot be ruled out that adequately powered studies might find other abstinence effects.

Overall, it is crucial that the findings of the present study be considered in terms of its specific sample characteristics (i.e., non-clinical, majority female sample of undergraduates from a sexually conservative country, most of whom were using pornography 3–4 times a week [61.4%], had PPCS scores below the clinical cutoff of 76 [84.7%] and had no intrinsic desire to quit their pornography use [89.8%]). These findings may not generalize to clinical samples, non-clinical samples with higher FPU or PPU, predominantly male samples, samples from more sexually liberal countries or samples composed solely of pornography users intrinsically motivated to quit their pornography use. Future studies using similar prospective designs and diverse samples with varying gender ratios and levels of FPU, PPU and intrinsic motivation to abstain from pornography use are needed to replicate and extend these findings.

It is also important to consider when interpreting the present study's findings that the study period (February–March 2021) was during the third wave of the COVID-19 pandemic in Malaysia, when movement control and social distancing measures were enforced throughout the country (Rampal & Liew, 2021; Zamri et al., 2021). This could have potentially influenced the present study's findings in two ways. First, participants' self-reported affective states during the study period could potentially have been impacted by elevated psychological distress levels brought about by the pandemic (Marzo et al., 2021; Necho et al., 2021). Second, participants' sexual lives could have also been affected by the pandemic. Frequency of partnered sex among participants may have decreased due to reduced access to potential sexual partners (Herbenick et al., 2022). While some longitudinal data have shown that as a general trend, FPU and PPU did not increase over time during the pandemic, this might not necessarily have been the case for all pornography users (Grubbs et al., 2022; Koós et al., 2022). For example, there has been evidence of retrospective self-reports, particularly among male participants, of increased FPU and frequency of masturbation during the pandemic when compared to pre-pandemic frequencies (Gleason et al., 2021; Sallie et al., 2021). It is plausible that some participants in the present study may have developed an increased reliance on masturbating to pornography as a sexual outlet in the absence of opportunities for partnered sex during stay-at-home orders, which could have made abstaining from pornography more challenging than usual. In sum, it is important to take into account that the

present study's findings may not necessarily generalize to a post-pandemic setting.

Limitations and Directions for Future Research

The present study has several limitations that need to be highlighted. First, because the study's aim was to investigate abstinence effects irrespective of gender, there were no gender restrictions in the inclusion criteria, resulting in a sample that was close to two-thirds (64.2%) female. Compared to females, males tend to use pornography more for sexual pleasure (Böthe et al., 2021a, Grubbs et al., 2019c) and have a stronger sex drive in general (Baumeister et al., 2001). As such, males may be more reliant on pornography as a sexual outlet than females. Therefore, it may be reasonable to speculate that males could have greater difficulty in abstaining from pornography than females even if they have similar rates of baseline FPU. However, because females had lower past 4-week FPU than males in the present sample, exploratory analyses with gender as moderator were not run because they would have been difficult to disentangle from exploratory analyses with past 4-week FPU as moderator. Future studies could consider restricting inclusion criteria to just male participants to examine whether abstinence effects manifest in a male-only sample or run adequately powered studies with both genders included (but with narrower inclusion criteria for baseline FPU [e.g., \geq six times a week]) to investigate potential varying abstinence effects by gender, if any. Differing contexts of pornography use across genders (e.g., women in relationships are more likely than men to use pornography primarily or only with their partner; Carroll et al., 2017) could also be accounted for as a potential moderator of effects in future studies.

Second, nearly half (45.4%) of participants in the abstinence group reported using pornography at least once during the experimental period, which could have led to a mitigation in the frequency and/or intensity of any withdrawal-related symptoms experienced for these participants. While excluding participants who lapse from analyses may introduce bias because these participants are likely to experience the greatest amount of withdrawal in the first place (Hughes, 2007b, Piasecki et al., 2003a, 2003b, Shiffman et al., 2004), it is important to keep in mind that withdrawal-related symptom scores of the abstinence group as a whole may have been influenced by the considerable proportion of participants who did lapse in the present study.

Third, because the focus of the present study was to examine effects of abstinence from pornography specifically, participants in the abstinence group were allowed to masturbate without pornography or engage in non-pornography-related sexual activity. An advantage of allowing non-pornography-related sexual outlets is that potential manifestations of withdrawal-like symptoms can be more clearly attributed to

a dependency on pornography use instead of dependency on masturbation or sexual activity (e.g., if withdrawal-like symptoms persist even after masturbating without pornography). However, a drawback of this is that it may not resemble many real-world abstinence attempts, given that many individuals with PPU may decide to abstain from pornography and masturbation or abstain from sexual activity altogether as a short-term recovery strategy (Fernandez et al., 2021). Future studies could consider modifying abstinence instructions so that they also include masturbation or sexual activity altogether.

Fourth, while the experimental design used in the present study contributed to rigorous internal validity due to randomization and use of a control group, experimental designs are inherently limited in the extent to which the studies' results are generalizable to the wider population (because of the use of a relatively small, homogenous sample) and applicable to real-world situations (because of the emphasis on controlled conditions that prioritize internal validity over ecological validity). Importantly, abstinence in the present study may not be representative of real-world abstinence attempts because participants knew that abstinence would only last for a temporary 7-day period, they could lapse without consequence, and they could terminate their participation at any moment. Non-experimental longitudinal studies of intrinsic abstinence attempts are needed to supplement data provided by studies that experimentally manipulate abstinence.

Fifth, because it is plausible that a pornography withdrawal syndrome, akin to the withdrawal syndromes of some substances (cf. Hughes et al., 1994), might only begin or worsen after a significant period of abstinence (e.g., one or two weeks), the fairly brief duration of the present study (i.e., 7 days) meant that any potential withdrawal symptoms that might have emerged beyond an initial 7-day period could not be captured. Future studies could consider increasing the duration of the abstinence period to investigate this possibility.

Sixth, the outcome measures used to assess potential pornography withdrawal-related symptoms in the present study were a limitation because they were modified from existing scales constructed to assess alcohol craving (Flannery et al., 1999), smoking withdrawal symptoms (Welsch et al., 1999) and general affect (Thompson, 2007). Measures of pornography-specific withdrawal-related symptoms need to be developed and validated for use in future abstinence studies.

Seventh, despite having a significantly shorter recall period compared to a single end-of-week assessment, end-of-day surveys still rely on retrospection and as such remain susceptible to some recall bias (Newman & Stone, 2019). Research comparing aggregated momentary affect ratings throughout the day to retrospective end-of-day affect ratings

demonstrates that end-of-day ratings of negative affect tend to be slightly biased toward peak and recent affect (Neubauer et al., 2020). Future studies can use ecological momentary assessment (EMA) instead of daily surveys for greater sensitivity to fluctuations of affect throughout the day.

Eighth, because the baseline measures for all outcome variables had a bigger recall period (past 7 days) compared to the daily measures (past day), changes in daily scores relative to baseline could not be examined. Incorporating a pre-intervention period where baseline data are also collected using the same daily surveys would allow for standardization of measures and examination of changes from baseline.

Finally, the present study did not account for the type or genre of pornography that participants typically used. It is possible that specific types of pornography (e.g., non-mainstream content; Hald et al., 2018) or greater variability of pornography content consumed (Lewczuk et al., 2021) may be associated with increased difficulty in abstaining from pornography use and can be accounted for in future abstinence studies.

Conclusion

Current understanding of the potential manifestation of withdrawal-related symptoms during abstinence from pornography is still in its infancy. The present study is the first to prospectively examine the manifestation of withdrawal-related symptoms in abstaining participants in comparison to a non-abstaining control group, in contrast to previous research that has relied on retrospective self-report of perceived abstinence effects. The present study contributes preliminary data that represent a first step toward understanding whether and under what conditions withdrawal-related symptoms may (or may not) manifest when regular pornography users attempt to abstain from pornography use for a 7-day period. More prospective data across diverse samples are needed to verify and expand upon the findings of the present study.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s10508-022-02519-w>.

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Declarations

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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EXHIBIT 8



“Basically... porn is everywhere”

A Rapid Evidence Assessment on the Effects that Access and Exposure to Pornography has on Children and Young People

By Miranda A.H. Horvath, Llian Alys, Kristina Massey, Afroditi Pina, Mia Scally and Joanna R. Adler



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About the Office of the Children's Commissioner

The Office of the Children's Commissioner (OCC) is a national organisation led by the Children's Commissioner for England, Dr Maggie Atkinson. The post of Children's Commissioner for England was established by the Children Act 2004. The United Nations Convention on the Rights of the Child (UNCRC) underpins and frames all of our work. The elements of the UNCRC of most relevance to this work are set out in Appendix 1.

The Children's Commissioner has a duty to promote the views and interests of all children in England, in particular those whose voices are least likely to be heard, to the people who make decisions about their lives.

One of the Children's Commissioner's key functions is encouraging organisations that provide services for children always to operate from the child's perspective.

Under the Children Act 2004, the Children's Commissioner is required both to publish what she finds from talking and listening to children and young people and those who work with them, and to draw national policymakers' and agencies' attention to the particular circumstances of a child or small group of children that should inform both policy and practice.

The OCC has a statutory duty to highlight instances where it believes that vulnerable children are not being treated appropriately in accordance with duties established under the UNCRC, as well as under other international and domestic legislation.

This report forms part of the Inquiry into Child Sexual Exploitation in Gangs and Groups commenced by the Children's Commissioner in October 2011, using powers made available under Section 3 of the Children Act 2004.

Acknowledgements

The authors of this report would like to thank the members of staff at the Office of the Children's Commissioner who have been incredibly supportive and acted as true critical friends throughout the project. We are particularly grateful to Sue Berelowitz, Carlene Firmin, Sandra Gulyurtlu, Shaila Sheikh, Denise Malcolm, Charlotte Grant, Gareth Edwards, Alison Wheeler, Jenny Clifton, Tom Green, Oliver Berman and Douglas Smith.

We are deeply indebted to the experts (listed in Appendix 2) who gave up their time to participate in the workshop on 5 March 2013 and to those who were not able to attend the workshop but consulted with us individually. We would like to thank the young people who participated in the workshop held on 25 April 2013 and the staff from the school for making the event possible. Thank you to everyone who responded to the call for papers; without your help we would have missed many valuable references.

Finally, the team would like to thank their families and friends, who allowed them to "check out" of normal life and conduct a Rapid Evidence Assessment for three months!

Foreword

The first year of our Inquiry into Child Sexual Exploitation in Gangs and Groups revealed shocking rates of sexual violation of children and young people in these contexts. We obtained incontrovertible evidence that, between August 2010 and October 2011, at least 2,409 children were victims of sexual exploitation. Equally troubling was the evidence that at least a further 16,500 children were at high risk of being sexually exploited because they showed three or more risk indicators.

The Inquiry team heard children recount appalling stories about being raped by both older males and peers, often in extremely violent and sadistic circumstances, and in abusive situations that frequently continued for years. The majority of victims are female, although there is no doubt that boys are victims too.

This appalling abuse blights the lives of those affected, leaving them struggling to cope with the legacy of their abuse.

The use of and children's access to pornography emerged as a key theme during the first year of the Inquiry. It was mentioned by boys in witness statements after being apprehended for the rape of a child, one of whom said it was "like being in a porn movie"; we had frequent accounts of both girls' and boys' expectations of sex being drawn from pornography they had seen; and professionals told us troubling stories of the extent to which teenagers and younger children routinely access pornography, including extreme and violent images. We also found compelling evidence that too many boys believe that they have an absolute entitlement to sex at any time, in any place, in any way and with whomever they wish. Equally worryingly, we heard that too often girls feel they have no alternative but to submit to boys' demands, regardless of their own wishes.

We commissioned this important literature review to deepen our own and others' understanding of the impact on children and young people of viewing pornography, including extreme and violent images. Research in this area is fraught with ethical difficulties. While this report has shed considerable light on this complex and important issue, there is no doubt that much more work needs to be done before definitive statements can be made about causal links between the use of pornography and perpetrators going on to commit sexual abuse or exploitation.

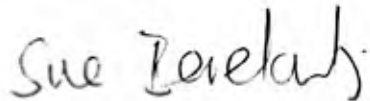
It is unclear whether pornography is more extreme and violent today than in the past. What is clear, however, is that children's access to pornography is fundamentally different from that of previous generations because of the prevalence of these materials on the internet. Explicit sex and violent still and moving images depicting rape, bestiality, the use of pain and humiliation are potentially just a few clicks away. The proliferation of smartphones and tablets and their use by children and young people to access the internet, often away from adult supervision, make it very difficult for parents to control access to these images. In addition, there is a significant problem of sexual bullying and harassment through children and young people sending personal, intimate images to others; this can have profoundly distressing consequences.

This report goes some way to answering our questions about the impact on children of viewing pornography. Our request to the researchers was that they presented to us the unvarnished evidence, free from ideology. We know that pornography is pervasive and that a significant proportion of children are exposed to it or are accessing it. We know that boys are more likely to view pornography out of choice than girls, who are much more reluctant viewers. Most worryingly,

the evidence here shows that exposure to sexualised and violent imagery affects children and young people and that there are links between violent attitudes and violent media.

We are indebted to Miranda Horvath, Llian Alys, Kristina Massey, Afroditi Pina, Mia Scally and Joanna Adler for producing such excellent work within a very tight timescale.

This report contains eight recommendations and highlights further areas for research. It makes an invaluable contribution to our understanding of this serious and deeply troubling subject, shining a light onto issues that we as a society too often consign to the shadows, being simply too difficult to bring to the light. As one young person said to us: "Basically, porn is everywhere."



Sue Berelowitz
Deputy Children's Commissioner for England

Executive summary

Background

This Rapid Evidence Assessment (REA) was commissioned by the Office of the Children's Commissioner (OCC) as part of its Inquiry into Child Sexual Exploitation in Gangs and Groups (CSEGG). It was conducted by a consortium led by Middlesex University, to explore the effects that exposure and access to pornography have on children and young people. The CSEGG Inquiry was launched in October 2011 to better understand the scale, scope, extent and nature of child sexual exploitation in gangs and groups. An emergent issue was whether accessing and viewing pornography can have an impact on children and young people's expectations and attitudes towards sexual activity and relationships. Despite limited recourse to previous evidence, professionals interviewed over the course of the CSEGG Inquiry raised concerns about the impact of pornography at 43 per cent of site visits and 48 per cent of evidence hearings (Berelowitz et al., 2012). Professionals from many agencies reported particular concerns about the effects of pornography involving high levels of degradation, violence and humiliation, which they believe to be prevalent in material freely available online. Police case files that were reviewed cited instances of boys and young men referring to pornography during sexual assaults (Berelowitz et al., 2012). This REA was therefore commissioned to inform the CSEGG Inquiry Chair, Panel and Project Team, enabling them to add depth to their ultimate recommendations regarding child sexual exploitation in gangs and groups.

A narrow time frame was necessary in order to feed into the ongoing Inquiry. This precluded a full literature or systematic review and therefore a question-led REA was conducted over three months. In designing the REA, the language and terminology of the specified questions were crucial. Three research questions were devised to guide the review and operational definitions were constructed for each key term. These were then further refined in consultation with the research commissioners. The final versions of the guiding questions are included below:

1. Identify and assess the existing evidence base on children and young people's access and exposure to pornography.
2. Identify and assess the existing evidence base on the effects that access and exposure to pornography have on children and young people's sexual expectations, attitudes and behaviours.
3. Draw upon existing literature reviews and meta-analyses on the associations between access and exposure to sexualised or violent visual imagery on children and young people, and consider whether this bears relevance to the issue in question.

The key terms are defined in the full report. Our aim was to use terminology and definitions that were clear and concise while still capturing multifaceted experiences and perspectives.

Findings

A few robust conclusions can be reached from this REA, but it is apparent that much more research is needed. Gender differences have emerged as a continuous and highly pertinent theme throughout the questions addressed by this REA.

What can we confidently conclude?

FINDING 1 (RQ1, P21): A significant proportion of children and young people are exposed to or access pornography but there are differences in the literature regarding the regularity of exposure and access (or the rate of recurrence) which highlight the importance of considering frequency as well as prevalence in order to obtain a full picture.

FINDING 2 (RQ1, P24): Children and young people's exposure and access to pornography occur both online and offline. However, in recent years the most common methods of access have changed from magazines, videos, television and books, with the internet becoming more dominant. There is some evidence that children and young people consider pornography easy to access and culturally prevalent. Accessing pornography through one method appears to be positively related to accessing it through others.

FINDING 3 (RQ1, P23): Exposure and access to pornography appear to increase with age; there is greater risk of exposure with increasing age. Contradictory findings exist in relation to age of first exposure, with variations from 10 to 17 years old.

FINDING 4 (RQ1, P22): Exposure is more prevalent than (ostensibly) deliberate access. However, there is considerable variation in the rates of unwanted exposure and some studies report significant numbers of children and young people accessing pornography.

FINDING 5 (RQ1, P23): There are gender differences in exposure and access to pornography. Young men and boys are more likely to be exposed to pornography than young women and girls. They are also more likely to access, seek or use pornography and are exposed to or access pornography more frequently. These gender differences are also found in children and young people's attitudes towards pornography. Boys and young men generally view pornography more positively and state that they view it primarily out of curiosity while girls and young women generally report that it is unwelcome and socially distasteful and that they feel much more uncomfortable than boys and young men when viewing pornography.

FINDING 6 (RQ2, P34): Access and exposure to pornography affect children and young people's sexual beliefs. For example, pornography has been linked to unrealistic attitudes about sex; maladaptive attitudes about relationships; more sexually permissive attitudes; greater acceptance of casual sex; beliefs that women are sex objects; more frequent thoughts about sex; sexual uncertainty (e.g. the extent to which children and young people are unclear about their sexual beliefs and values); and less progressive gender role attitudes (e.g. male dominance and female submission). Children and young people learn from and may change their behaviour due to exposure and access to pornography.

FINDING 7 (RQ2, P36): Access and exposure to pornography are linked to children and young people's engagement in "risky behaviours" (e.g. engagement in sexual practices from a younger age, engaging in riskier sexual behaviours such as unprotected anal or oral sex, and the involvement of drugs and alcohol in sex). For example, young people who used pornography were more likely to report having had anal sex, sex with multiple partners and using alcohol and drugs during sex (Braun-Courville & Rojas, 2009). However, the majority of the research that has found this is cross-sectional and/or correlational, therefore causal relationships cannot be established. "Sexting" (which should be considered as comprising a range of activities) has recently emerged as another "risky behaviour" because it can lead to various negative outcomes for children and young people,

including through its potential use within bullying and exploitation. The majority of the harassment that is a consequence of sexting is directed by young men towards young women (Ringrose et al., 2012).

FINDING 8 (RQ3, P47): Considering sexualised and violent imagery more broadly, we can conclude that **exposure to sexualised and violent imagery affects children and young people**; however, the ways in which they may be affected and how long-lasting the effects may be are debatable. There are links between violent attitudes and violent media; specifically, children and young people who hold more violent attitudes access more violent media. One study found that exposure to sexualised material was related to the likelihood of young people engaging in more sexualised behaviour because they perceived more social pressure to have sex (Bleakley et al., 2011b).

There is more contradictory evidence concerning other issues. These issues are nonetheless important to note.

What are we less confident about?

The **contexts in which young people are exposed to and access pornography** appear to suggest that they can be both solitary and group activities, and that a range of motives and reasons can be ascribed to them. These findings may be less robust, particularly due to technological developments and trends in children and young people's preferences at both the general and individual level.

Few studies have focused on **the content of the pornography and whether there is anything particular about what children and young people are exposed to or access**. Much current discourse is asserted without a clear evidence base or is inferred from what is believed to be available on pornographic websites. Different and subjective definitions of pornography complicate the issue, as does the possibility that studies will rapidly become out of date since trends develop and subside in the production of pornography. Nonetheless, the issue is of utmost importance given claims that pornography has become more hard core, explicitly degrading and dehumanising, and with a greater focus on aggressive sexual activity.

There are also contradictory findings regarding the possible **effects of pornography on children and young people's sexual expectations**, but there is some emerging evidence indicating that young people are dissatisfied with the sex education they are receiving and that they are increasingly drawing on pornography, expecting it to educate and give information regarding sexual practices and norms. Only a few studies, or components of larger studies, have found that there are age differences in how children and young people process or are affected by pornography.

There is a reasonable amount of research that links **exposure to pornography with aggressive behaviour**. However, it is limited in its interpretive value. Fewer studies have investigated whether victimisation via aggressive behaviour is linked vicariously or directly to pornography. Even fewer studies have examined pornography's relationship with sexual offending among children and young people, and hardly any have used non-offending control groups. Viewing pornography can lead to the development of antagonistic and unhealthy views towards women and sexuality and can contribute to creating environments of greater tolerance and less disapproval of unwanted sex. Pornography has been linked to sexually coercive behaviour among young people, and, for young women, viewing pornography is linked with higher rates of sexual harassment and forced sex. This may be because young people may not have the opportunity to compare what they see in pornography with real life and they may be more susceptible to internalising the distorted images and modifying their behaviour accordingly.

Research on **children and young people's perceptions of risk and danger, potentially associated with their access and/or exposure to pornography**, reports mixed findings. Most consensus is found in relation to reports that children and young people are aware of the dangers of online pornography but feel that they have the necessary coping skills to deal with them. There appears to be a "third person effect", with many young people reporting that people younger than themselves are in greater danger. Only a handful of research articles report young people holding positive attitudes towards pornography. Young women and girls in particular are more worried than young men and boys about the portrayal of gender relations in pornography and the connotations of objectification associated with that skewed portrayal.

Viewing **sexualised and/or violent imagery** can affect children and young people's attitudes and behaviours, which may subsequently affect their attitudes towards sexual relationships and behaviours within them. However, the research is disparate in focus, with few studies directly examining attitudes towards relationships. It is possible to extrapolate, but the evidence is inconsistent. Highly contentious and contradictory findings also exist on the impact of violent imagery on children and young people, which may inform our understanding of the effects of pornography, but numerous methodological issues exist in the literature. The relationships between young people viewing violence and their attitudes and behaviours are complex and multifaceted.

There is emerging but contradictory evidence about the effects of other sexualised imagery on children and young people, through film, music, advertising and specialist media. Although not yet clear, we can infer that the format through which children and young people are exposed to sexualised media may be important.

Questions still to answer

This REA has found limited evidence to inform the following research or policy areas:

1. **Potential individual differences:** We do not know whether a child's or young person's characteristics, vulnerabilities and/or strengths are related to exposure and/or access (and, if they are, how and why).
2. **Likelihood of exposure or access:** How and whether we should limit opportunities for exposure and access are unclear.
3. **Cultural or subcultural effects** on young people's attitudes and behaviours towards and stemming from pornography have yet to be fully considered.
4. **Young people's feelings towards and perceptions of pornography** have been largely untapped.
5. **Potential associations between pornography and pathological behaviour** are not clear. For example, we cannot say whether sexual addiction or compulsivity among children and young people stem from access and exposure to pornography.
6. **The effect that viewing sexualised or violent images has on children and young people:** The remit of this REA meant that we could consider only those literature reviews and meta-analyses which showed that there is an extensive but mixed evidence base requiring further scrutiny.
7. **The mechanisms or duration of change** to either attitude or behaviour still need to be considered.

8. **Parameters and possible intersections between sexualised and violent imagery and pornography** are contested and unresolved.
9. **Causal relationships** between pornography and associated expectations, attitudes and behaviours are still to be elucidated.

Overall, there were seven significant concerns about the reviewed evidence base:

1. The lack of consensus within the literature regarding what was being examined, or even about who could be considered a child or young person, meant that it was difficult to generalise or extrapolate.
2. Problems with operational definitions of key terms made comparison challenging. These problems included limited knowledge of children and young people's conceptions or understanding of pornography.
3. Why do we still not know anything about causality? Maybe it is time to ask different questions.
4. Has the nature of the issue changed qualitatively or merely been exacerbated by the pace of technology and people's uncertainty in a climate of rapid change?
5. Very little research has been conducted that keeps children and young people's experiences at the centre.
6. The impacts of cultural differences and cultural context are rarely acknowledged or examined.
7. Few papers reviewed for this REA – whether they were included or excluded – even began to consider the effects of pornography on children and young people who were: an ethnicity other than the majority for the country in which the research was conducted; a sexuality other than heterosexual; transgender; or anything other than able-bodied and with full capacity (relative to their development).

Recommendations

Please note that given our last concern, all recommendations are made with the caveat that diversity must be a central consideration within future work.

For future research

All of the research that is proposed should be conducted in ways that give a voice to young people and, where appropriate, should be centred around them and have participatory processes embedded. More research is needed from multidisciplinary perspectives and using a wide range of methodologies; these should include meta-analyses and systematic reviews that can provide comprehensive accounts of what the existing evidence base tells us. All research should state clearly what definition of pornography was used and why. Authors should also be advised to state clearly whether they have separately (aside from pornography) considered:

- sexualised imagery (that does not meet the definition of pornography);
- violent imagery; and
- sex acts for storyline not arousal.

In light of the evidence in this report, we recommend that:

1. research should be conducted that investigates what children and young people think pornography is and the content of what they describe as pornographic; and
2. research should be conducted that investigates whether there are links between the pornography that children and young people are exposed to and/or access and their attitudes towards, aspirations about and feelings towards relationships and sex.

An extended list of recommended research questions is provided in Appendix 17 of the main report.

Recommendations to Government

In light of the evidence in this report:

1. **The Department for Education** should ensure that all schools understand the importance of, and deliver, effective relationship and sex education which must include safe use of the internet. A strong and unambiguous message to this effect should be sent to all education providers including: all state funded schools including academies; maintained schools; independent schools; faith schools; and further education colleges.
2. **The Department for Education** should ensure curriculum content on relationships and sex education covers access and exposure to pornography, and sexual practices that are relevant to young people's lives and experiences, as a means of building young people's resilience. This is sensitive, specialist work that must be undertaken by suitably qualified professionals, for example, specialist teachers, youth workers or sexual health practitioners.
3. **The Department for Education** should rename 'sex and relationships education' (SRE) to 'relationships and sex education' (RSE) to place emphasis on the importance of developing healthy, positive, respectful relationships.
4. The Government, in partnership with internet service providers, should embark on a national awareness-raising campaign, underpinned by further research, to better inform parents, professionals and the public at large about the content of pornography and young people's access of, and exposure to such content. This should include a message to parents about their responsibilities affording both children and young people greater protection and generating a wider debate about the nature of pornography in the 21st century and its potential impact.
5. Through the commitments made to better protect girls and young women from gender-based violence in the ending violence against women and girls action plan, the **Home Office** and the **Department for Education** should commission further research into the safeguarding implications of exposure and/or access to pornography on children and young people, particularly in relation to their experiences of teenage relationship abuse and peer exploitation.
6. **The Home Office** should incorporate the findings of this report into the ongoing teen abuse campaign. Future activity on this workstream should reflect young people's exposure to violent sexualised imagery within their peer groups and relationships.

Recommendation to the Youth Justice Board

7. The **Youth Justice Board** should include questions on exposure and access to pornography within the revised ASSET assessment tool, to better inform understanding of possible associations with attitudes and behaviour and improve the targeting of interventions for young people displaying violent, or sexually harmful, behaviours.

We welcome the important work being undertaken by Claire Perry MP, in her role as adviser to the Prime Minister regarding the availability of internet pornography. We ask that she consider the findings of this report and its implications for the Government's work on internet controls and the sexualisation of children and young people.

Rapid Evidence Assessment methodology

An REA is a tool for synthesising the available research evidence on a policy issue as comprehensively as possible, within the constraints of a given timetable. The REA comprised three stages that are briefly outlined below; for a detailed account please see Appendix 5 of the main report.

The first stage was to identify the literature. Inclusion/exclusion criteria were agreed between the OCC and the project team and search terms were developed from the research questions in order to maintain scope and rigour. Guidelines for conducting searches were developed to ensure consistency. Three approaches were taken for identifying literature: academic database searches, grey literature database searches, and a direct call for papers. During stage one, 41,000 items were identified.

The second stage was an in-depth screening of the literature. First, titles and either abstracts or executive summaries were reviewed against the inclusion/exclusion criteria (see Appendix 6 in the main report). At this point, 38,666 items were excluded and 2,304 included. Full text articles were then obtained for all includable materials; these were read in full and compared against the inclusion/exclusion criteria once again. If papers were judged not to meet the inclusion criteria, they were excluded at this stage (2,028 papers were excluded). Papers that met the inclusion criteria were coded in a specially designed data extraction form. Finally, they were assessed using a weight of evidence approach, in which the quality and relevance of the literature were assessed and given a strength rating: high, medium or low (see the main report for full details of this approach, which was derived from Gough, 2007). In total, 276 papers were included in the final analysis, with 155, 159 and 116 relating to research questions 1, 2 and 3 respectively (these figures add to more than the total number of papers included because some papers were applicable to more than one research question).

In stage three of the REA, the data collected for each of the research questions were synthesised, then examined for patterns, integrated and revisited to check the synthesis for quality, sensitivity, coherence and relevance. Initial findings were presented and discussed at a workshop with practitioners, policymakers, academics and members of the OCC team, and subsequently in a workshop with 16 to 18-year-old young people.

Background

Introduction

This document reports on a Rapid Evidence Assessment (REA) that was conducted by a consortium led by Middlesex University and commissioned by the Office of the Children's Commissioner (OCC) in order to explore the effects that exposure and access to pornography have on children and young people. The Inquiry into Child Sexual Exploitation in Gangs and Groups (CSEGG) was launched by the OCC in October 2011 and has gathered evidence to understand the scale, scope, extent and nature of child sexual exploitation in gangs and groups. Despite limited recourse to previous evidence, professionals interviewed over the course of the CSEGG Inquiry raised consistent concerns about the impact of pornography at 43 per cent of site visits and 48 per cent of evidence hearings (Berelowitz et al., 2012). Professionals from many agencies reported particular concerns about the effects of pornography involving high levels of degradation, violence and humiliation, which they believe to be prevalent in material freely available online. Police case files that were reviewed cited instances of boys and young men referring to pornography during sexual assaults (Berelowitz et al., 2012). The findings of this literature review will inform the CSEGG Inquiry Chair, Panel and Project Team, and the recommendations to tackle child sexual exploitation in gangs and groups made in the final CSEGG Inquiry report.

The Office of the Children's Commissioner tender specification for a literature review

The tender specified nine research objectives (see Appendix 3) to be addressed in three parts:

1. to identify and assess the existing evidence base on children and young people's access to, and use of, pornography;
2. to identify and assess the existing evidence base on the impact of pornography on children and young people's expectations, attitudes and behaviours; and
3. to draw upon wider evidence on the impact of viewing sexualised or violent images on children and young people, and consider whether this bears any relevance to the issue in question.

A narrow time frame was necessary in order to feed into the ongoing Inquiry. This precluded a full literature or systematic review and therefore a question-led REA was conducted over three months. In designing the REA, the language and terminology of the specified questions were crucial. Careful consideration was given to the existing debates about terminology (see, for example, Chronaki, 2013) and as a result the three research questions to guide the REA were amended and definitions constructed for the key terms. The final questions for the REA were as follows:

1. Identify and assess the existing evidence base on **children and young people's access and exposure to pornography**.
2. Identify and assess the existing evidence base on the **effects** that access and exposure to pornography have on children and young people's **sexual expectations, attitudes and behaviours**.
3. Draw upon existing literature reviews and meta-analyses on the associations between access and exposure to **sexualised or violent visual imagery** on children and young people, and consider whether this bears relevance to the issue in question.

Sub-questions were also developed for each research question to ensure that key issues were addressed (see Appendix 4). Each word or phrase in bold above was defined operationally to ensure that we would have clarity and consistency throughout the REA. We were aware that we could have conducted an REA on the semantics surrounding the terminology used, and while we acknowledge the importance of such discourse, our aims were more prosaic: namely, that we should use terminology and definitions that were clear and concise yet broad enough to capture the richness and diversity of experiences and perspectives available. Figure 1 gives the definitions for each term in bold in the research questions above.

Figure 1: Definitions used for the REA

Pornography

Sexually explicit media that are primarily intended to sexually arouse the audience (Malamuth, 2001, p.11817).

Children and young people

Any person aged up to 18 years, up to 24 years for children in the care system, and up to 25 years for disabled children. The use of the term "children" incorporates young people (CSEGG Inquiry, p.3).

Access

Deliberately obtaining and viewing pornographic material.

Exposure

Non-deliberate and/or coerced obtaining and viewing of pornographic material.

Effects

The influences that pornography may or may not have on children and young people and the associations between pornography and outcomes/next steps/consequences. These will be considered from multiple perspectives, including whether they are a) direct-personal; b) indirect-personal; c) direct-group; d) indirect-group; e) developmental; f) inter-group; g) intra-group; h) short or long term.

Sexual expectations, attitudes and behaviours

This is a catch-all term for the facets of children and young people that pornography may be associated with; it may also include aspirations and feelings. The relationships (or absence of a relationship) between these different elements, e.g. attitudes and behaviours, will be explored.

Sexualised visual imagery

This includes moving and static sexualised visual images created by anyone and that may or may not have sounds accompanying them (e.g. images from page 3, "lads' mags", advertising, music videos). We are not including imagery widely defined as art or other forms of sexualised material such as music or erotic literature that do not have images.

Violent visual imagery

This includes moving and static violent visual images created by anyone and that may or may not have sounds accompanying them (e.g. violent computer games, horror films, violent television programmes, music videos). We are not including imagery widely defined as art or other forms of violent material such as music or literature that do not have images.

We adopted the definition of children and young people already used by the CSEGG Inquiry. Where it was not possible to apply the older age brackets for children in the care system and disabled children, 18 was considered the standard cut-off point. In circumstances where publications were unclear about the ages of the children and young people that they had considered, 18 was considered to be the cut-off point.

When adopting a definition of pornography, we were conscious that there may be cross-over with material that is humiliating or extremely violent but not necessarily primarily intended to sexually arouse the audience. We remained mindful of this when conducting the REA. We were also aware of American author on pornography Gail Dines' observation that contemporary pornography is increasingly "hard-core, body-punishing sex in which women are demeaned and debased" (Dines, 2010, p.xi). We were also conscious of the increasing literature on sexualised media and the sexualisation or "pornification" of society. Given the short timescale of the REA and the specific requirements of the Inquiry, it was not possible to obtain a complete overview of children and young people's access and exposure to sexual media in general (for example, in music videos, advertising or works of art) nor was it possible to review the literature on pornification (nor was it desirable to do so, considering the likely duplication of work by Papadopoulos, 2010, and others). Due to the potentially very large scope of the literature on violent visual imagery and sexualised imagery, only reviews and meta-analyses were considered in order to complete the report in the time available.

Finally, we acknowledge that other evidence exists pertaining to the key research questions but it was not possible to gain access to all the original sources nor was it possible to list all sources with similar findings. We are confident, however, that the main themes in the literature have been identified.

Methodology

Study design

The research commissioners imposed a strict timeline on this project and their guidance was to meet that timeline even if material was overlooked or missed. In order to meet this requirement, a systematic literature review or meta-analysis was impossible. A question-led adapted Rapid Evidence Assessment (REA) was used in order to present a critical overview of key findings and to identify significant omissions in the literature.

An REA is a tool for synthesising the available research evidence on a policy issue, as comprehensively as possible, within the constraints of a given timetable. An REA toolkit produced for government social research has been widely adopted (see www.civilservice.gov.uk/networks/gsr/resources-and-guidance for details; for examples, see Brown et al., 2010; Disley et al., 2011; Horvath et al., 2012¹). According to Davies (2003) the functions of an REA are to:

- search the electronic and print literature as comprehensively as possible within the constraints of a policy or practice timetable;
- collate descriptive outlines of the available evidence on a topic;
- critically appraise the evidence (including an economic appraisal);
- sift out studies of poor quality; and
- provide an overview of what the evidence is saying.

The REA comprised three stages: identifying the literature, screening the literature and synthesising the data. These are briefly outlined below (a detailed account can be found in Appendix 5).

Stage one: Identifying the literature

Setting criteria for the literature to be included and excluded was the initial step in identifying the literature. The inclusion/exclusion criteria were agreed between the Office of the Children's Commissioner (OCC) and the project team and can be found in Appendix 6.

Search terms

Search terms were developed from the research questions in order to maintain scope and rigour. The initial search terms used to identify relevant literature were agreed in conjunction with the OCC and were broken down by research question (see Appendix 7). Guidelines for conducting the searches were also developed to ensure consistency (see Appendix 8). Included and excluded data were separated into different documents and retained, and a minimum of 10 per cent of all searches were also moderated by the primary investigator.

Three approaches were taken for identifying literature: academic database searches, grey database searches, and a direct call for papers (for details of these strategies, see Appendix 5). Once materials had been located, each reference was screened in more depth. First, the titles and abstracts or executive summaries were reviewed against the inclusion and exclusion criteria. Where possible, stage one screening took place simultaneously with the searches (for more details of the process, see Appendix 5). Table 1 shows the number of items identified, included and excluded at each stage of data processing.

Table 1: Summary of the total number of items identified, included and excluded, at each stage of data processing

	Total	Included	Excluded
Stage one: identifying the literature	No.	No.	No.
<i>Academic searches</i>	38,165	1,910	36,225
<i>Grey literature searches</i>	2,656	303	2,353
<i>Call for papers</i>	179	91	88
Total	41,000	2,304	38,666
Stage two: screening the literature			
<i>Weight of evidence</i>	2,304	276	2,028

Stage two: screening the literature

Full text articles were then obtained for all material that fit the inclusion criteria (for more details of how this was achieved, see Appendix 5). Any articles not obtained were excluded due to the strict time frame for the data to be assessed. References that met the inclusion criteria were read in full and compared against the inclusion and exclusion criteria once again. If papers were judged not to meet the inclusion criteria, they were excluded at this stage (2,028 papers were excluded). Papers that met the inclusion criteria had their key information placed on the specially designed data extraction form (see Appendix 14). They were also assessed using a weight of evidence (WoE) approach, in which the quality and relevance of the literature were assessed and given a strength rating: high, medium or low (see Appendix 14 for the WoE coding form). This approach was developed by the EPPI-Centre (Evidence for Policy and Practice Information and Co-ordinating Centre; Gough, 2007) and can be used for both quantitative and qualitative studies. This method ensured consistency in approach and allowed us to assess extant research – which had been conducted using varied methodologies and diverse analytical strategies – according to a common assessment structure. We modified the EPPI-Centre’s approach for this study (the guidelines we used for conducting the WoE assessments are set out in Appendix 15). Each study was weighted according to three dimensions (A, B and C) in conjunction with each other:

- A) Taking into account all of the quality assessment issues, can the study findings be trusted in answering all of the study question(s)?
- B) Appropriateness of research design and analysis for addressing the question, or sub-questions, of this review.
- C) Relevance of particular focus of the study (including conceptual focus, context, sample and measures) for addressing the question, or sub-questions, of this review.

These judgements were then combined into a final dimension (D) that signified the overall WoE judgement (high, medium or low). The studies with lower judgements were given less weight in the synthesis. Table 2 shows the number of studies included and excluded at the second stage of screening.

Table 2: Summary of the papers included for each research question and the number of papers falling into each WoE category

	Number of papers included in the REA	Number of papers in WoE category		
		Low	Medium	High
Research question 1	155	67	60	28
Research question 2	159	68	63	28
Research question 3	116	56	37	23
Total	430*	191	160	79

See Appendix 16 for the full lists of papers included for each research question and their WoE category.

* This figure is greater than the total of included papers in Table 1 because some papers were applicable to more than one research question.

Stage three: synthesising the data

In order to produce the final report, the data collected for each of the research questions were synthesised. The first step taken to ensure synthesis was to focus on the research questions. This was undertaken from the very beginning and ensured by identifying search terms for each research question individually and keeping a log of which data applied to which research question. The data collected were then organised by research question into separate files and entered on a spreadsheet. The data were explored for patterns, integrated and revisited to check the synthesis for quality, sensitivity, coherence and relevance (see Appendix 5 for the details of this process). Initial findings were presented and discussed at a four-hour workshop with practitioners, policymakers, academics and members of the OCC team with relevant expertise; this took place on 5 March 2013. Participants for the workshop were recruited through general invitations that were part of the call for papers (see Appendix 11) and targeted invitations to people who were known to have expertise in the area. Fifteen people participated in the workshop (the full list is in Appendix 2). Three participants who could not attend the workshop were consulted on a one-to-one basis (see Appendix 2). No remuneration was provided for contributing to either the workshop or the consultations.

The workshop on 5 March and the draft report highlighted that little was known about children and young people's understanding of what is meant by pornography, and therefore a workshop was conducted with seventeen 16 to 18-year-olds on 25 April 2013, to provide some support for and critical engagement with the REA findings (see Appendix 5 for full details of the workshop). Also, we believed it was important to have some participation in this review that was centred on young people. The Middlesex University Department of Psychology Ethics Committee reviewed the proposal for the workshop; it was conducted in line with the OCC's Participation Strategy and Safeguarding Policy and with the permission of the school involved. The OCC gave the young people a £10 gift card to thank them for taking part.

A brief summary of the points of interest from both workshops are shown in Figure 2. Both workshops resulted in lively and passionate debates which enhanced the REA.

Figure 2: Points of interest from the workshops with experts and young people

Workshop with experts

The workshop with experts took place while the studies collected for the REA were being analysed and interpreted. The questions being asked and the terminology and definitions used came under close scrutiny during the workshop with experts. Many of the concerns raised appeared to result from the perspective from which the experts were approaching the issues. There was general consensus that the context in which research and other work is being done, specifically in relation to rapid advances in technology, means that our understanding is continually outdated. How can and should this be most effectively addressed was discussed a number of times by the experts without a satisfactory conclusion being reached. Another key concern from the experts' workshop was about the "normalisation" of pornography in our society and what the effects may be on children and young people. Related to this were concerns about the extremely violent and degrading content of some pornography that is now easily accessible to anyone with access to the internet.

Workshop with young people

The workshop with young people occurred once the draft report had been completed. The first discussion that took place in the workshop with young people was conducted in gender-specific groups. There were marked differences between the groups despite them being asked the same questions. The young men moved very quickly to discussing genres of pornography they were familiar with from website categories, whereas the young women covered a far wider range of images that may or may not be considered pornographic. The young men emphasised the "need for" and "benefits of" pornography to themselves and other young men, whereas the young women focused on the detrimental effects of pornography on young women both in relation to their body image and in sexual interactions. Generally, it proved complicated and challenging for the young people to define pornography. The second task was a debate in mixed-gender groups. It was immediately apparent that the young people who had to argue that pornography had no effect on children and young people found it almost impossible to construct arguments that supported this view. None of the young people actually believed that pornography had no effect. The need for more education about relationships and sex was highlighted by the young people repeatedly, as was the crucial role teachers and parents can play in helping them to make sense of, and develop strategies for coping with, pornography.

Summary of Rapid Evidence Assessment studies

For each research question we present first the findings that we are confident about, followed by those we are less confident about, and finally what we do not know from the Rapid Evidence Assessment (REA). Two final sections for each research question outline what we need to know urgently (high priority) and what should be addressed once the high-priority work has been conducted (low priority). A table is provided for each research question to summarise the findings for each section.

Research question 1: The evidence base on children and young people's access and exposure to pornography

This section of the report examines the literature concerning children and young people's exposure and access to pornography. A total of 155 articles, reports and book chapters were included. Excluded items appeared more relevant to questions 2 and 3. Most academic articles originated in the USA, but there were also a number of articles from Northern European countries such as the Netherlands, Sweden and Norway. Approximately 20 articles, reports and reviews from the UK were identified, of which less than half included "new" empirical evidence. It is worth noting that a few large-scale projects have generated a number of articles, for example the UK Children Go Online project (four reports), the EU Kids Online project (one academic report, three book chapters and one article) and the USA-based Youth Internet Safety Surveys (YISS-1 and YISS-2; six articles).

One of the challenges with this question was the proliferation of evidence referring to sexualised media that may or may not include pornography. Where there was doubt about the relevance of an article, this was discussed with the primary investigator. Given the short time scale of the REA and the specific requirements of the Inquiry, it was not possible to obtain an overview of children and young people's access and exposure to sexualised media in general (for example, in music videos, advertising or works of art). Here too, we acknowledge that other evidence exists pertaining to the current question, but it was not possible to gain access to all the original sources nor was it possible to list all sources with similar findings. We are confident, however, that the main themes in the literature have been identified.

It is important to note that for many studies it was not possible to distinguish between exposure and access, and many use "exposure" as a catch-all term; as such, the term "access" will be used only when studies made it clear that they were asking participants about deliberate access. The lack of consistency in terminology within the literature (unwanted exposure, accidental exposure, unintentional exposure, deliberate exposure, accessing or seeking pornography) highlights the challenge of describing children and young people's behaviour in such dichotomous terms. Intention or deliberation is not always clear, even for the actor. For example, a young man explained that he looked for pornography on the internet "for a laugh" but conversely "expressed frustration at the way it was then sometimes impossible to escape" (Buckingham & Bragg, 2003, p. 39). Ybarra et al. (2009) also explain how exposures may be unwanted but not necessarily involuntary (for example, their expectations regarding the X-rated material may have been different to the reality; "hard core" instead of "soft core" or a specific genre). Mitchell et al. (2003a, 2003b), Wolak et al. (2007) and Ybarra et al. (2009) recorded 13 per cent, 21 per cent and 17 per cent (respectively) of incidents where children and young people said they knew sites were X-rated before they entered the sites but found that these episodes were not otherwise distinguishable from other instances of unwanted exposure.

Table 3: Summary of findings for research question 1

Question	Findings
What do we know and are confident about?	1) A significant proportion of children and young people are exposed to or access pornography. 2) Exposure is more prevalent than access. 3) There are gender differences in exposure and access to pornography. 4) Exposure and access to pornography appear to increase with age. 5) Children and young people are exposed to and access both online and offline pornography.
What do we think we know but are less confident about?	6) Children and young people are exposed to and access pornography in a number of different contexts. 7) We do not know exactly what children and young people are being exposed to or what they are accessing.
What don't we know?	8) Are a child or young person's characteristics, vulnerabilities and strengths related to exposure and access (and, if they are, how and why)? 9) How should we reduce the risk of exposure and prevent access? And should we be doing this?
What do we need to know? High priority	1) How do young people define pornography and how do they rate explicitness? Are there different definitions according to gender, age or other demographic factors? 2) What are young people seeing when they are exposed to pornography and when they access it? 3) Are young people recording and distributing images of coerced sexual activity via mobile technology, for example in gang environments?
What do we need to know? Low priority	4) How do children and young people's socio-demographic characteristics (ethnicity, socio-economic status (SES) etc.) and experiences (within the family and the wider context) influence their online decision making and moderate or mediate any impact of online experiences? 5) Are there associations between online gaming and exposure to sexual online content?

What do we know and are confident about?

Finding 1: A significant proportion of children and young people are exposed to or access pornography

Research findings are relatively consistent across studies, countries and times, suggesting that many children and young people are exposed to and access pornography. However, it is also important to note that a significant proportion is neither exposed to pornography nor seeks it out.

Despite commonalities across the literature, direct comparisons should be approached with caution as differences in sample composition (age, gender, culture etc.), temporal changes in social norms (Bryant, 2009), social desirability and other responding biases and the swift development of technology and the “porn business” make it difficult to capture rates of exposure, particularly across the lifespan. In particular, such issues should be borne in mind when attempting to draw any conclusions from retrospective studies (e.g. Sabina et al., 2008) where college or university students are asked to recall exposure to pornography in childhood and adolescence.

Notwithstanding differences in the age ranges sampled, studies of exposure across the lifetime of children and young people report considerable exposure and access rates across time and countries, from approximately 43 per cent to 99 per cent (for example, Häggström-Nordin et al., 2009; Kim, 2001, 2011²). Some Swedish studies report the highest rates; for example, 99 per cent of a sample of 16 to 24-year-olds had been exposed to pornography (Tydén & Rogala, 2004). Exposure and access rates for male children and young people range from 83 per cent to 100 per cent and reported rates for females are from 45 per cent to 80 per cent (Corne et al., 1992; Cowan & Campbell, 1995; Cowell & Smith, 2009³).

Recent studies looking at exposure to sexual or pornographic images online or offline and focusing on the previous three or twelve months understandably report lower rates of between 15 per cent and 57 per cent (Braun-Courville & Rojas, 2009; Livingstone et al., 2011; Shek & Ma, 2012⁴).

Ybarra and Mitchell (2005) report that children and young people who reported unintentional online exposure were more than 2.5 times as likely to report intentional exposure online. Not surprisingly, prior access is associated with future access in a number of studies (e.g. Peter & Valkenburg 2009, 2010a, 2011).

There are discrepancies in the literature with regards to the regularity of exposure and access (or the rate of recurrence). Some studies suggest that exposure and access across the internet and other media are infrequent; for example, while 99 per cent of Tydén and Rogala’s (2004) Swedish sample of 16 to 24-year-olds had been exposed to pornography, only 16 per cent had been exposed frequently, compared with 51 per cent occasionally and 33 per cent rarely (see also Flood, 2007; Mesch, 2009; Peter & Valkenburg, 2006, 2007, 2009, 2010a⁵). Other studies report greater frequency, largely, but possibly not solely, in relation to access (e.g. Mulley, 2013; Skau, 2007; Tsitsika et al., 2009⁶). Few studies have considered the length of time spent viewing pornography, however (Skau, 2007 is an exception).

This contradictory evidence highlights the importance of considering frequency as well as prevalence in order to obtain a full picture. Many studies cite only one or the other, and there are differences in categorisation of frequency. To illustrate the importance of reporting both, Brown and L’Engle (2009) found that very little exposure to sexually explicit media was reported in terms of frequency of exposure; however, when recoded as exposure or no exposure, 53 per cent of males reported exposure to sexually explicit media compared with 28 per cent of females.

Finding 2: Exposure is more prevalent than access

Studies that have distinguished between exposure and access report that unwanted exposure appears more prevalent than (ostensibly) deliberate access (e.g. Flood, 2007; Livingstone & Bober, 2003, 2004, 2005; Romito & Beltramini, 2011). However, rates vary considerably, with between 4 and 66 per cent of children and young people reporting unwanted exposure (Braun-Courville & Rojas, 2009; Cowell & Smith, 2009; Mitchell et al., 2003a, 2003b⁷), and some studies cite significant

numbers of children and young people accessing pornography. For example, Bleakley et al. (2011b) report that 50.7 per cent of a sample of 13 to 18-year-olds in the USA accessed sexualised media content from at least one source (movies, television, music, pornographic websites and magazines). Access was not necessarily frequent, however; most of the sample said that they did not intend to seek sexual content within the next 30 days.

Finding 3: There are gender differences in exposure and access to pornography

Young men and boys are more likely to be exposed to pornography than young women and female children (Cowan & Campbell, 1995; Fleming et al., 2006; Flood, 2007, 2009⁸). Young men and boys are also more likely to access, seek or use pornography (Alexy et al., 2009; Bleakley et al., 2011b; Bonino et al., 2006⁹) and are exposed to or access pornography more frequently (Bonino et al., 2006; Cowan & Campbell, 1995; Flood, 2007¹⁰).

Finding 4: Exposure and access to pornography appear to increase with age

A number of studies suggest a greater risk of exposure to pornography with increasing age (Brown & L'Engle, 2009; Hasebrink et al., 2009; Johansson & Hammarén, 2007¹¹). Livingstone et al. (2011) found that older adolescents were four times more likely than the youngest children to have seen pornography online or offline across all forms of media. They also report that the sexual images older adolescents have seen online are more explicit. In Wolak et al.'s (2007) sample of 10 to 17-year-old children and young people, the majority who reported unwanted and wanted exposure were 13 to 17 years of age. For males, wanted and unwanted exposure increased with age while unwanted exposure in the past year increased with age among females (few females reported wanted exposure).

Explanations for the increase in exposure and access with age include:

- older children's greater engagement in online activities (Hasebrink et al., 2009; Livingstone & Bober, 2004);
- more frequent use of the internet, in particular to look for medical and sexual health-related advice (Luder et al., 2011);
- pubertal status, but this has been considered by only a few studies and findings are conflicting (Brown & L'Engle, 2009; Luder et al., 2011; Peter & Valkenburg, 2006¹²); and
- other biological (sexual) trajectories (low among prepubescent children, increasing in adolescence and early adulthood, then declining thereafter). Bryant (2009) proposes that exposure may be consistent with these trajectories, and this is supported by Træen et al.'s (2004) findings – children and young people under 25 reported greater accessing of pornography than individuals over 25, while a greater proportion of older age groups reported no access. This may, however, reflect generational differences in attitudes towards, and use of, pornography

However, a handful of studies have not found significant differences in frequency of access according to age (Bleakley et al., 2011a; Bonino et al., 2006; Mesch, 2009¹³) or in frequency of watching sexually explicit television programmes (Vanwesenbeeck, 2001) or receiving unwanted sexual material through MySpace (Rosen et al., 2008).

"The transition from primary to secondary school is when most people see it but some people see it earlier because of older family members or neighbours"

Workshop with young people

More contradictory findings exist regarding age at first exposure. Some studies report significant numbers of children being exposed at approximately 10 or 11 years of age (Burton et al., 2010; Cowan & Campbell, 1995; Cowell & Smith, 2009¹⁴), while others report slightly older average ages (14 to 17 years) with first exposure before 13 years old being rare (Brown & L'Engle, 2009; Sabina et al., 2008). Some studies suggest a younger age of first exposure for males in comparison with females (Johansson & Hammarén, 2007; Morgan, 2011; Romito & Beltramini, 2011¹⁵). Skau (2007) reported that age at first exposure was predicted by gender, current age (the younger they were at the time of the study, the earlier the exposure), and whether their father has used or does use pornography. Kubicek et al. (2010) found that young men who had had sex with men reported finding pornography on the internet between the ages of 12 and 13 but had been exposed to "traditional" media (magazines, cable or videos) much earlier (4 to 10 years old). This may be due to differential accessibility of the internet; however, similar findings are reported by Skau (2007) and Ybarra and Mitchell (2005; information on sexual orientation is not reported in these studies).

Finding 5: Children and young people are exposed to and access both online and offline pornography

"Internet is the big one"

"Anyone can access it – it's the internet"

Workshop with young people

The literature demonstrates that the most common ways in which children and young people access pornography have changed in recent years, from magazines, videos, television and books (Becker & Stein, 1991; Roe, 1987) to the internet playing a more dominant role (Flander et al., 2009; Flood, 2007¹⁶), but DVDs, films, magazines and television are still widespread (Bleakley et al., 2011a; Buckingham & Bragg, 2003; Cowell & Smith, 2009¹⁷). Ybarra and Mitchell (2005) compared children and young people who sought pornography offline *only* with those who sought pornography online and offline; they found that the latter group was associated with being older, being of Hispanic ethnicity, having a poor emotional bond with caregivers, and reporting internet expertise and greater frequency of internet use.

Wallmyr and Welin (2006) reported low exposure through mobile phones (3 per cent); however, mobile phones have become considerably more prevalent in the last decade. More recent research (and discourses from commentators) suggests that mobile phones are one of the main sources of exposure and access (Cowell & Smith, 2009; Nitirat, 2007; Papadopoulos, 2010¹⁸).

Bale (2011) reported that children and young people know how to access sexual material (if they should want to) and they believe that they have a right to do so. There is some evidence that young people consider sexual material easy to access and prevalent in society (Cowell & Smith, 2009; Häggström-Nordin et al., 2006; Livingstone & Bober, 2003), with some possibly considering it to be too widely available and/or accessible to young children (Livingstone et al., 2011; Mattebo et al., 2012; Mulley, 2013). Greater access to pornography may have been facilitated by technological developments (increased platforms for distribution, easier and cheaper production, anonymity: Crabbe & Corlett, 2010).

There are variations in exposure to pornography via the internet according to country. In some countries (e.g. Estonia, Finland, Turkey and Spain), the internet is one of the most common sources of pornography; whereas in some other countries (e.g. UK, Germany, Ireland, Portugal and Greece), children are more likely to see pornography through other means (Livingstone et al., 2011). In

Sweden, children and young people report cable and satellite television as a common source of pornography in addition to the internet (Svedin et al., 2011; Wallmyr & Welin, 2006).

Studies from Europe and the US have found that accessing pornography through one method appears to be positively related to accessing pornography through others (Bonino et al., 2006; Livingstone et al., 2011; Peter & Valkenburg, 2006¹⁹). There also appear to be gender differences in preference for and use of different methods; young men and male children search a larger number of sources than young women and female children (Bleakley et al., 2011a; Brown & L'Engle, 2009; Livingstone et al., 2011). Gender differences in exposure to pornography across media are most pronounced in relation to the internet (e.g. Lo & Wei, 2005; Morrison et al., 2004; Romito & Beltramini, 2011²⁰). However, the gender difference in frequency of pornography exposure may be reversed in relation to receiving unwanted sexual materials through MySpace (more female recipients than males; Rosen et al., 2008). Another possible difference raised in our first workshop and by Phippen (2012) is that females may be more interested than males in erotic fiction such as *Fifty Shades of Grey*. There is limited evidence but it also seems that there are cultural differences in how young people are exposed to/access pornography (e.g. Bekele et al., 2011; Kinsman et al., 2000; Njue et al., 2011).

Some studies have investigated the means by which children and young people are exposed to pornography on the internet; methods identified include pop-ups (Livingstone & Bober, 2004, 2005; Livingstone et al., 2005, 2011²¹), being sent unsolicited images or links in email attachments or through chat rooms or instant messages (Buckingham & Bragg, 2003; Cameron et al., 2005; O'Connell et al., 2004²²), or being taken to a site accidentally while searching for something else (Buckingham & Bragg, 2003; O'Connell et al., 2004; Freeman-Longo, 2000²³). The literature also suggests that children and young people are exposed to pornography through websites that are not themselves pornographic or "adult"; for example, video-hosting sites (Livingstone et al., 2011; Mulley, 2013), social networking sites and websites where young people upload and rate each other's photographs (Livingstone et al., 2011; Månsson & Söderlind, 2013; Mulley, 2013²⁴), gaming websites (Livingstone et al., 2011; Mulley, 2013) and peer-to-peer file-sharing websites (O'Connell et al., 2004; Greenfield, 2004²⁵).

It is not the place of this review to consider whether sex offenders use pornography to "groom" children and young people; however, it should be noted that this means of exposure (both online and offline) was mentioned in a number of sources (e.g. Cline, 2001; Dombrowski et al., 2007; Independent Parliamentary Inquiry into Online Child Protection, 2012; Shrock & Boyd, 2008, 2011) and that Livingstone et al. (2005) and Livingstone and Bober (2004, 2005) reported that 9 per cent of 9 to 19-year-old children and young people in the UK Children Go Online project had been sent pornographic images from someone they know and 2 per cent from someone they met online.

What do we think we know but are less confident about?

Finding 6: Children and young people are exposed to and access pornography in a number of different contexts

Boyd and Marwick (2009) cautioned that technology should be examined in context due to its key role in young people's lives. With regards to location, research suggests that young people can be exposed to or access pornography in almost any location (including at home, in internet cafés, friends' houses, school and other public places; Buckingham & Bragg, 2003; Hasebrink et al., 2009; Livingstone & Bober, 2003²⁶). Context comprises much more than location, however. The literature suggests that, for children and young people, accessing pornography can be a solitary or group activity. Male children and young men are much more likely to view pornographic material when

alone than female children and young women (Cowell & Smith, 2009; Romito & Beltramini, 2011; Svedin et al., 2011²⁷); however, many young people, regardless of gender, watch pornography with friends (Cowell & Smith, 2009; Wallmyr & Welin, 2006). Having friends who want to do it is a reason for accessing pornography cited by both male and female children and young people (Romito & Beltramini, 2011; Sabina et al., 2008). Bryant (2009) suggests that watching pornography in a group can be a way to encourage bonding between young men and that it may also be a way to achieve “status”, either directly through being seen as “cool” by one’s peers or indirectly by enabling sexual engagement with young women. Unni (2010) found that young men in India reported peer pressure to use pornography (no young women reported this). Bryant (2009, p.2) maintains that “males are commonly integral to the initial intentional exposure of both sexes”. Female children and young people describe being shown pornography by males, for example at school (Livingstone & Bober, 2004), and more young women than men report watching pornography with a partner to induce arousal (Cowell & Smith, 2009; Romito & Beltramini, 2011; Wallmyr & Welin, 2006). One young woman stated that “boys show me porn all the time” (Cowell & Smith, 2009, p.8). Concerningly, Romito and Beltramini (2011) report that 1.5 per cent of males in their sample and 6.6 per cent of females had been pressured by another person to access pornography.

The apparent gender differences in context described above may be related to the motives and reasons children and young people give for accessing pornography; for example, using pornography for sexual arousal is largely likely to be a solitary activity or one engaged in by a couple (Löfgren-Mårtenson & Månsson, 2010).

Young people’s commonly cited reasons for accessing pornography include:

- curiosity (Bale, 2011; Buckingham & Bragg, 2003; Cameron et al., 2005²⁸);
- masturbation (Bale, 2011; Cowell & Smith, 2009; Wallmyr & Welin, 2006) or sexual arousal (Cameron et al., 2005; Wallmyr & Welin, 2006); and
- getting ideas or for educational purposes (Bale, 2011; Buckingham & Bragg, 2003; Cowell & Smith, 2009²⁹).

Other, less commonly reported reasons include:

- “for a laugh” (Buckingham & Bragg, 2003);
- to relieve boredom, to develop sexual skills and confidence, to break the rules or oppose censorship and to be disgusted (Bale, 2011).

However, gender differences are apparent; young men and boys are more likely to report getting aroused for masturbation and sexual excitement (Cowell & Smith, 2009; Sabina et al., 2008; Wallmyr & Welin, 2006). Regarding curiosity, some studies report that young women and girls are more likely to look at pornography for this purpose than young men and boys (Cowell & Smith, 2009; Wallmyr & Welin, 2006), whereas others report the reverse (Sabina et al., 2008). Bleakley et al. (2011a) found that intentions to seek pornography in the next 30 days were predicted primarily by perceived normative pressure to seek sexual content (whether people who are similar to the respondent would access sexual content and what people important to the respondent would think about them accessing it) but also by attitudes concerning ease of access, likely enjoyment, whether it would be good/bad or foolish/wise to access sexual content and self-efficacy (whether the respondent thought they could seek sexual content in the next 30 days). Some researchers (see Collins et al., 2010; Flood, 2009) suggest that the context of exposure or access (including other actors) may mediate (enhance or reduce) any effects.

There is some evidence in the literature of children and young people sharing pornography, for example borrowing movies, exchanging website addresses and magazines, and sharing by mobile phone (Chetty & Basson, 2006; Cowell & Smith, 2009; Flander et al., 2009³⁰). The taking and sharing of indecent images of themselves and their peers on their mobile phones and online has received much more attention in the media and research in recent years (Brown, 2011; Ringrose et al., 2012). Lenhart (2005) reports that there are three main scenarios for sexting:ⁱ

1. exchange of images solely between two romantic partners (however, Phippen's UK study in 2012 found that sexting was not commonly in the context of a relationship);
2. exchanges between partners that are shared with others outside the relationship; and
3. exchanges between people who are not yet in a relationship, but where at least one person hopes to be. This is the most common scenario as reported by Phippen (2012).

Other, not necessarily unrelated motives include being bored and being under the influence of peers (Kopecký, 2012). Phippen (2012) proposes that young women will usually create these images in response to a young man's request, while young men will take images without encouragement.

Studies suggest that about 4 to 17 per cent of young people have sent or received "sexts" or have posted self-generated images online; there is a positive correlation with age but little apparent variation across gender and SES (Dake et al., 2012; Kopecký, 2012; Lenhart, 2005³¹). Receiving sexts seems to be more prevalent than sending them (e.g. Lenhart, 2005) and young people's perceptions of the commonality of sexting varies (Lenhart, 2005). In the London Borough of Havering sex survey, 26.3 per cent reported seeing naked images of someone they knew in the past 12 months (Mulley, 2013). There may also be associations with mobile phone use in general (e.g. time spent texting: Dake et al., 2012; extent of mobile use; whether they pay their own phone bill; whether parents limit the number of texts they can send: Lenhart, 2005) and sexual orientation (Rice et al., 2012 report that LGBT students were more likely to report sexting than were heterosexual students).

Ringrose et al. (2012, p.7) suggest that sexting appears to be "an experience that is pressurised yet voluntary – they choose to participate but they cannot choose to say 'no'" and propose that it "is not just an individual practice but also a group, networked phenomenon". Both Phippen (2012) and Ringrose et al. (2012) suggest that young women appear to be at a disadvantage in sexting situations. Young men usually make the requests for images (Phippen, 2012) and young women feel pressured and are often disparaged whether they comply or not (they are considered either a "slut" or "frigid": Lenhart, 2005; Ringrose et al., 2012). Moreover, young men appear to collect these images as evidence of their masculine prowess, as "trophies" (Phippen, 2012, p.12) or as a form of "commodity or currency" called "ratings" (Ringrose et al., 2012, pp.8, 26). Such images can be taken and/or disseminated as part of bullying or their discovery may lead to bullying; they may also lead to threats or blackmail or may be posted to or shared via paedophile chat sites (Brown, 2011; Phippen, 2012). One of the major challenges sexting presents is that, while it may be part of age-related pushing of boundaries and sexual experimentation, it can be difficult to distinguish between coerced and non-coerced pictures (Hilton, cited in Brown, 2011). Wolak et al. (2011) examined cases reported to the police in the USA and described aggravated incidents involving abusive or illegal elements beyond the creation/distribution and possession of sexually explicit images of children and young people (involving both adult and young perpetrators). These were distinguished from experimental incidents (similar to the scenarios described by Lenhart, 2005), which did not involve adults or intent

ⁱ There is a growing body of literature on the practice of sexting but there appears to be a discrepancy with regards to the definition; some researchers use it to refer to the sending of sexual images via mobile phones only (e.g. Lenhart, 2005; Rice et al., 2012) while others (e.g. Collins et al., 2010; Kopecký, 2012; Livingstone & Görzig, 2012; South West Grid for Learning, 2012) use the term to refer to sending sexual images or messages via the internet and/or phones.

to harm or reckless misuse (dissemination without the knowledge of the person in the image). Fifty per cent of the adults involved were 18 to 24 years of age. Wolak et al. (2011) concluded that most children and young people are not being criminalised for sexting; however, in 18 per cent of the experimental cases, there was an arrest despite there being no other criminal or malicious activity beyond the making or transmission of images. In the UK, the Association of Chief Police Officers' (n.d.) position on this issue is that it does not support children being criminalised or prosecuted and that safeguarding should be a primary concern in such situations.

The literature reveals other behaviours that may or may not be related to sexting, including using naked or partially clothed and/or sexual photographs of oneself as a profile picture on social networking sites or blogs (e.g. Collins et al., 2010; Williams & Merten, 2008). Cowell and Smith (2009) found that over a quarter of 13 to 17-year-old young people surveyed had used a webcam to show themselves in a sexual manner; over 30 per cent had posed for explicit photographs and just under 20 per cent had been filmed performing a sexual act. In contrast to most of the above research on sexting, young women were more likely to have done all of the above. A small number (two young men and four young women) had been offered money or gifts in return. A third of those who reported being filmed performing a sexual act had not consented to this and 9 per cent had had their images distributed without their permission. Emerging research has reported the recording and distribution of images of sexual activity via mobile technology in gang environments (Beckett et al., 2012) and the recording and distribution of coerced sexual behaviour and sexual assaults (Billingham, 2009; Powell, 2010).

Finding 7: We do not know exactly what children and young people are being exposed to or what they are accessing

Few studies have looked in detail at the content of pornography or specifically examined what children and young people are exposed to online. Much current discourse is opinion or is inferred from what is believed to be available on pornographic websites (e.g. Bryant, 2009; Crabbe & Corlett, 2010; Ezzell, 2009³²). Different and subjective definitions of pornography and sexually explicit material compound the issue. Some studies did not provide participants with a definition of pornography or sexually explicit material (e.g. Becker & Stein, 1991; Bonino et al., 2006), thus allowing for misinterpretation and subjectivity. Others have been quite broad and may have elicited reports of exposure to art or sexual health websites (e.g. Wolak et al., 2007, p.249 gave the definition "pictures of naked people or of people having sex"). The questions upon which a determination of exposure is made can be subjective too; for example, they assume knowledge (e.g. "How often do you see X-rated movies?": Brown & L'Engle, 2009, p.138) or assume understanding (e.g. "In the past year, you will have seen lots of different images – pictures, photos, videos. Sometimes, these might be obviously sexual – for example, showing people naked or people having sex": Livingstone et al., 2011, p.49). Ybarra et al. (2009) cite another of the team's manuscripts submitted for publication that reports that 41 per cent of their 10 to 15-year-old sample claimed not to know what an "X-rated website" is. Peter and Valkenburg (2010a) provided their respondents with a clear definition of pornography (pictures or videos with clearly exposed genitals and pictures or videos in which people are having sex); however, it is acknowledged that there can be ethical concerns with providing children and young adolescents with definitions of pornography (this is why Livingstone et al., 2011 decided not to provide their participants with a definition).

Livingstone et al. (2011) is one of a small number of studies to ask children what they had seen; however, little detail is given concerning the explicitness of the behaviour observed (e.g. vaginal sex and/or anal sex, two people and/or group sex). Images or videos of naked people were most common (almost three-quarters of children exposed to online pornography), followed by people having sex, then images of genitals (almost half of children). This is consistent with some earlier

studies (e.g. 59 per cent nudity and 46 per cent sexual activity: Flander et al., 2009) and a little higher than others (32 per cent: Mitchell et al., 2003a). Studies suggest that, while most young people have seen “soft porn”, exposure to extreme pornography (e.g. paraphilia, sexual violence, indecent images of children) appears to occur in a significant minority (Buckingham & Bragg, 2003; Cowell & Smith, 2009; Flander et al., 2009³³). Studies report rates of 2 to 7 per cent for exposure to images or videos of violent sexual content (Flander et al., 2009; Livingstone et al., 2011; Mitchell et al., 2003a; Ybarra et al., 2011). Romito and Beltramini (2011) reported significantly greater prevalence, however: 42 per cent of 18 to 25-year-old young men and 32 per cent of young women had seen violence against women, including extreme degradation, rape, torture and murder, while 33 per cent of young men and 26 per cent of young women had seen depictions of women seeming to enjoy the violence inflicted on them. Exposure to explicit content appears to be more likely among young men and boys (Häggström-Nordin et al., 2009; Romito & Beltramini, 2011; Sabina et al., 2008). Svedin et al. (2011) also reported that young men who were more frequent users of pornography (18 years old) had viewed all kinds of pornography significantly more often than young men in the control groups of less frequent users and non-users (with the exception of heterosexual sex). This included group sex, homosexual sex, sex with violence or force, sex with animals and sexual abuse between adults and children.

Some sources suggest that parents are particularly concerned that older young people (particularly males) seek out more hard-core or violent pornography (Mumsnet evidence to the Independent Parliamentary Inquiry into Online Child Protection, 2012) and that increased consumption leads to habituation and desensitisation and the growing need for more explicit material (Eberstadt & Layden, 2010). Concerns were also raised to the Inquiry (2012) that more explicit material can be found on the internet but there is a lack of empirical evidence to support this (i.e. limited systematic investigations). Skau (2007) compared pornographic content across different media and found that bestiality and fetishes were more likely to be seen on the internet but that rape was most often viewed on DVD or video.

What don't we know?

Finding 8: Are a child or young person's characteristics, vulnerabilities and strengths related to exposure and access (and, if they are, how and why?)

A number of studies have examined characteristics other than age and gender that may be associated with exposure to and accessing of pornography; however, there is yet to be a convergence of findings upon which to make robust judgements.

Most of the included studies reported predominantly White participants (e.g. Bleakley et al., 2011a) or did not provide ethnic information (e.g. Bonino et al., 2006). As such, it is not possible to consider whether perceived ethnicity or culture is associated with exposure to and access of pornography. Studies in the USA were more likely to include diverse populations and they report some tentative findings; being African American was associated with greater exposure for both young men and women in Brown and L'Engle's (2009) study and in Dake et al. (2012), while Rice et al. (2012) found that African American children and young people were twice as likely to sext than White children and young people. Religion is another characteristic that has received scant attention. An exception is an Israeli study by Mesch (2009), which found a negative relationship between internet pornography access and religiosity (self-defined and whether the participants attended a religious school).

Few studies have examined the effect of children and young people's educational level on their risk of exposure. An exception is Mesch's (2009) study, which found that accessing pornography online was associated with lower attachment to school in an Israeli sample of young people. Vanwesenbeeck

(2001) also reports that more educated young women watch sexually explicit television programmes less often; however, Luder et al. (2011) found that, for young women and female children, wanted and unwanted exposure were positively associated with being a student.

Research has also examined parental characteristics and SES, but the findings are conflicting (possibly due to different methods of determining SES). However, some research suggests that a positive parent-child relationship may be associated with less exposure to pornography (e.g. Mesch, 2009; Shek & Ma, 2012; Vandoninck et al., 2010). Dake et al. (2012) also found that sexting is more prevalent in children and young people from non-two-parent families. Exposure to pornography is associated with having less educated parents in some studies (e.g. Brown & L'Engle, 2009) but not in others; Luder et al. (2011) found that, for young women and female children, wanted and unwanted exposure were associated with having a more educated father. Some studies report no association with parental income and/or SES (Shek & Ma, 2012), while some have found a positive association (Mitchell et al., 2003a, 2003b) and others report a negative association (e.g. Brown & L'Engle, 2009; Hasebrink et al., 2009; Livingstone et al., 2005³⁴).

There is growing evidence in the literature that greater exposure to sexual images is associated with greater internet use (Fleming et al., 2006; Mesch, 2009; Mitchell et al., 2003a, 2003b³⁵) and the use of the internet for other functions, for example information seeking, gaming, surfing, downloading, chatting and instant messaging (van den Eijnden et al., 2008), and with greater expertise or digital literacy (Livingstone et al., 2005; Vandoninck et al., 2010).

Finding 9: Should we reduce the risk of exposure and prevent access (and, if so, how)?

There is increasing research on minimising exposure to pornography, focused on parental, technical and skills-based approaches. Hasebrink et al. (2009) report that, across Europe, parents (particularly those with higher SES) attempt to mediate their offspring's internet use through a number of strategies; setting time restrictions, monitoring children as they go online and discussing internet use seem to be preferred to technical strategies such as filtering and monitoring software. The activities of female children are mediated more often than those of males, and parental mediation appears to increase with age until the offspring is 10 to 11 years old and then decreases (Hasebrink et al., 2009). Hasebrink et al. (2009) further report that 31 per cent of European parents state that their child has encountered harmful content on the internet (compared with 21.9 per cent for the UK), and 66 per cent of parents say that their child knows what to do in such situations (compared with 75.4 per cent in the UK). However, research suggests that parents underestimate the actual extent of their children's exposure to pornography; for example, Livingstone et al. (2011) found that 40 per cent of parents whose child had seen sexual images online, when asked, reported that their child had not been exposed. There was an indication that parents were likely to overestimate exposure to pornographic content for younger children and slightly underestimate it for older children.

There are conflicting findings regarding parents' role in prevention. Wolak et al. (2007) report that if young people had attended an internet safety presentation by law enforcement personnel, they were at reduced risk of unwanted exposure; however, those who reported being talked to by parents or adults at school about online pornography had higher odds of exposure (this is perhaps consistent with Bleakley et al., 2011a, who found that parental disapproval was associated with greater exposure). Similarly, Mitchell et al. (2003a) report that parental supervision was not associated with a reduction in exposure; rather, they found that checking the history function, asking what the young person does while online, and checking the screen while the young person is online were associated with greater exposure. Ybarra and Mitchell (2005) found that online seeking of pornography was

associated with having household rules about not visiting pornography websites. However, it is unknown what came first; parents may be employing such strategies because their offspring have been exposed to or have been accessing inappropriate material. In contrast to the above findings from the USA, Livingstone et al. (2005) report that 12 to 15-year-olds in the UK with lower "peer-to-peer restriction" (those less likely to be told by parents not to use instant messaging, play games online, use email and download material) were more likely to be exposed to and access pornography. They also found that 16 to 17-year-olds who perceive their parents to have imposed privacy restrictions are less likely to be exposed to or access pornography.

A number of studies report that filtering and blocking software reduce the risk of unwanted exposure and access (Mitchell et al., 2003a, 2003b; Wolak et al., 2007; Ybarra et al., 2009), although there are exceptions (Fleming et al., 2006). Wolak et al. (2007) report that filtering and blocking software reduced the risk of unwanted exposure and access but they note that unwanted exposure to online pornography occurred despite the use of filtering and blocking software in more than half of families with home internet access (also see Mitchell et al., 2003a, 2003b; Ybarra et al., 2009). Interestingly, Ybarra et al. (2009) discovered that preventive software reduced unwanted exposure for children and young people aged 10 to 15 years but not for those aged 16 to 17 years. Moreover, other commentators and researchers have argued that filters can also block material that children and young people may want or need to access, such as websites concerning advice on sexual health or sexual orientation (Kaufman, 2003). An older study by Cameron et al. (2005) found that children and young people could easily get around indirect parental monitoring (e.g. checking history files) and that third party filtering or blocking software was often removed by parents due to inconvenience.

Some commentators and researchers question whether we should use filtering or blocking or whether to help young people and children to develop resilience and the skills to manage online content. In Buckingham and Bragg's (2003, p.74) study of sexual media, young people described positively rejecting material that they considered themselves too young to watch and were often not pleased at parents' attempts at regulation, seeing it as "patronising" and their parents as being "old-fashioned". Bryant (2009) also suggests that young people have standards of acceptable and unacceptable content by which they evaluate pornographic material and that they select material based on these standards. The literature suggests that young people have a number of strategies for dealing with unwanted exposure. Livingstone et al. (2011) explain that some respond passively (26 per cent), for example they stopped using the internet for a period of time, while others take a more proactive approach (22 per cent), such as telling someone like a friend or parent or changing filter or contact settings. Similar strategies were reported in studies by Fleming et al. (2006) and Livingstone and Bober (2004, 2005). In the study by Rosen et al. (2008), 94 per cent of responses to the receipt of unwanted sexual material on MySpace were appropriate (e.g. telling the person to stop, blocking them, logging off, reporting the incident to an adult or to MySpace). Some strategies may be considered risky, however: for example, clicking on the link or returning to it later (e.g. Livingstone & Bober, 2004, 2005). There may be gender differences in responses to exposure; for example, young women appeared more likely to report that they immediately deleted received messages (Flander et al., 2009; Tsaliki, 2011) or showed an adult (Flander et al., 2009), while young men were more likely to visit the proposed websites and were more likely to keep received messages. Tsaliki (2011) reported similar differences with regards to age, with younger children being less interested in trying to access the material. Vandoninck et al. (2010) and Mitchell et al. (2003a, 2003b) found that young people were less inclined to talk to others about negative experiences on the internet, with just under half never talking about them to anyone. Vandoninck et al. (2010) found that few approach an adult and that experiences were mainly shared with peers, while Mitchell et al. (2003a, 2003b) found that parents were told in 39 per cent of cases and friends or siblings told in 30 per cent of cases. Livingstone and Bober (2004, 2005) report lower rates of reporting to a parent or teacher (6 per

cent) or to peers (7 per cent). Mitchell et al. (2003a, 2003b) also found that relatively few unwanted exposures are reported through official channels and propose that this may be due to lack of awareness of these channels on the part of the children and young people and their parents.

What do we need to know?

High priority

This REA highlights a number of areas for further research. Before further research is undertaken, however, a discussion is required concerning definitions (e.g. Munro, 2011). There is a lack of consensus in the literature making it difficult to compare across studies. Children and young people must be included in this discussion. Their definitions should take precedence over those of policymakers and researchers if we are to examine their use of pornography in context. The following research questions require immediate attention:

- How do young people define pornography and how do they rate explicitness? Are there different definitions according to gender, age or other demographic factors?
- What are young people seeing when they are exposed to pornography and when they access it?
- Are young people recording and distributing images of coerced sexual activity via mobile technology, for example in gang environments?

Low priority

- How do children and young people's socio-demographic characteristics (ethnicity, SES etc.) and experiences (within the family and the wider context) influence their online decision making and moderate or mediate any impact of online experiences (Munro, 2011; Bryant, 2009)?
- Are there associations between online gaming and exposure to sexual online content (Hasebrink et al., 2009)?

Due to greater population mobility and the international reach of technologies such as the internet, more cross-national studies such as the EU Kids Online project should be conducted. Mixed methodological approaches seem the most informative, as quantified data alone cannot capture the meaning and reality of pornography exposure and access for children and young people. Conversely, it is important to acknowledge the need for accurate statistical information to contextualise the extent, incidence and frequency of matters identified qualitatively, to maintain perspective and add to the ability to generalise from findings. Munro (2011) suggests the use of peer research methodology to reduce any status or power discrepancy between the participants and the researcher. This may also encourage greater disclosure and honesty in responding.

Research question 2: The existing evidence base on the effects that access and exposure to pornography have on children and young people's sexual expectations, attitudes and behaviours

Research question 2 of the REA examines the literature pertaining to the effects that access and exposure to pornography (online and offline) have on children and young people's attitudes, behaviours and sexual expectations. There were 159 articles, reports and book chapters of relevance, evenly split between attitudes and behaviours. Far fewer examined sexual expectations directly (two out of eight in total), but elements of that could be found across most papers. The majority of research papers originated in the USA, followed by European studies (Sweden, in

particular) and Canadian studies. Very few directly relevant studies were conducted in the UK (approximately eight).

Table 4: Summary of findings for research question 2

Questions	Findings
What do we know and are confident about?	<ol style="list-style-type: none"> 1) There are differences in children and young people's attitudes towards pornography according to their gender. 2) Access and exposure to pornography affect children and young people's sexual beliefs. 3) Children and young people learn from and may change their behaviour because of exposure and access to pornography. 4) Access and exposure to pornography are linked to children and young people's engagement in "risky behaviour".
What do we think we know but are less confident about?	<ol style="list-style-type: none"> 5) Children and young people's age is related to how they understand and process pornography and therefore how it affects them. 6) The effects of pornography on children and young people's sexual expectations are unclear. 7) Exposure and access to pornography appear to be related to children and young people's perpetration of and victimisation through aggressive behaviour. 8) Exposure and access to pornography as a child or young person appear to be related to sexual offending. 9) Exposure and access to pornography affect children and young people's perception of risk and danger.
What don't we know?	<ol style="list-style-type: none"> 10) We do not know what effects the cultural context has on young people's attitudes and behaviours towards and stemming from pornography. 11) We cannot infer causality. 12) There is much we still do not understand about young people's feelings towards and perceptions of pornography. 13) We do not know whether pornography leads to sexual addiction and compulsivity.
What do we need to know? High priority	<ol style="list-style-type: none"> 1) What roles do culture and socialisation play in the differences observed between studies and on young people's attitudes towards pornography? 2) What are risk and protective factors for children and young people in relation to aggressive, risky and offending behaviours?

Questions	Findings
What do we need to know? Low priority	3) What is the effect of other sexualised media, such as advertisements, on young people and children? 4) Are there links between sexualisation, objectification of young people and tabloid media?

What do we know and are confident about?

Finding 1: There are differences in children and young people's attitudes towards pornography according to their gender

"There's more pressure on girls than on boys"

Workshop with young people

There are fairly consistent differences in how male and female young people view pornography. Boys and young men generally view it more positively and report that they view it primarily because of curiosity, while girls and young women generally report that it is unwelcome and socially distasteful and that they feel much more uncomfortable when viewing pornography (Bryant, 2009; Cameron et al., 2005; Caron & Carter, 1997³⁶). Girls, more frequently than boys, believe that pornography could create uncertainty and demands around sexuality (Häggström-Nordin et al., 2009). According to Livingstone et al. (2011), young women appear more upset about sexual material they are exposed to while using the internet than do young men. According to a 2013 paper on the same EU population, overall boys and young men appear more bothered by violence they see online than young women, while girls are more concerned with contact-related risks (Livingstone et al., 2013). Rogala and Tydén (2003) reported on data from a sample of Swedish female teenagers indicating that four out of five believed that porn influences people's behaviour and that 32 per cent of those who viewed it believed it had influenced them; 19 per cent gave positive examples of the influence of pornography while 66 per cent gave negative examples. Other Swedish research by Wallmyr and Welin (2006) reports that 46.3 per cent of females and 23.3 per cent of males described pornography as "degrading". The majority of males (62.7 per cent) responded positively towards pornography, describing it as "stimulating" and "cool", but above all "exciting". The youngest women were the most negative. Older females reported more positive views. However, this research included people up to the age of 25 and because no age breakdowns were provided we cannot be sure exactly what the views of children and young people were in this sample.

Finally, Cantor et al. (2009) found that males and females respond differently to pornographic stimuli. Males appear to focus more on the physical aspects of the stimuli and are more affectively positive than females, and females tend to focus on the relational aspects of the depictions. According to Johansson and Hammarén (2007), though, it is difficult to discern why these differences exist; they suggest that we need to look into the socialisation of the two genders more closely (see also the previous discussion concerning gender differences in the context and reasons for accessing pornography in research question 1).

Finding 2: Access and exposure to pornography affect children and young people's sexual beliefs

"Porn is... providing an arousal in you. Stimulates ideas which make you want it more"

Workshop with young people

The systematic literature review by Owens et al. (2012) suggests that there is a relationship between young people who are exposed to internet pornography and an array of sexual beliefs. Studies in this area have been conducted in a wide range of countries; this means that, when interpreting or generalising from findings, caution must be applied as the impacts of societal norms are unclear.

A study of 529 Greek children and young people found that participants who were exposed to sexually explicit material were at risk of developing unrealistic attitudes about sex and were more likely to have maladaptive attitudes towards relationships (Tsitsika et al., 2009). A correlational study of 2,001 Taiwanese children and young people found that exposure to internet pornography was associated with greater acceptance of sexual permissiveness and a greater likelihood of engaging in sexually permissive behaviour. Most importantly, this effect remained when it was examined simultaneously with exposure to traditional pornography, general media use and demographics (Lo & Wei, 2005). Links between exposure to pornography, more sexually permissive attitudes and greater acceptance of casual sex have also been found in the US (Braun-Courville & Rojas, 2009; Brown & L'Engle, 2009; Zillman, 2000) and Sweden (Häggström-Nordin et al., 2006). Some of these studies have also found links with less progressive gender role attitudes (e.g. male dominance and female submission) (Brown & L'Engle, 2009; Häggström-Nordin et al., 2006). Participants also highlighted the double standard reinforced in pornographic material: that is, women with multiple partners are considered promiscuous, while men with multiple partners are revered (Häggström-Nordin et al., 2006). However, it must be noted that this particular sample's ages varied from 16 to 24, so generalisations should be made with caution. Other studies have found that not only do frequent viewers of pornography have more positive attitudes towards the material (than those who use it less frequently or not at all) but they believed that by using such material they could have a more stimulating sex life (Svedin et al., 2011).

The most prolific researchers in this field, Peter and Valkenburg from the Netherlands, published a series of relevant studies between 2007 and 2011 with the following findings:

- Exposure to sexually explicit online films was significantly related to the belief that women are sex objects (when exposure to other forms of sexual content was controlled for) (Peter & Valkenburg, 2007).
- How much children and young people liked internet pornography was a mediating factor in the relationship between exposure and the belief that women are sex objects. They also found the reverse relationship (the impact of the belief that women are sex objects on exposure to internet pornography is also mediated by a liking for internet pornography). Therefore, exposure to internet pornography is both a potential cause and a consequence of viewing women as objects (Peter & Valkenburg, 2009).
- Frequent use of internet pornography was linked with more frequent thoughts about sex, more frequent distractions because of sex and a stronger interest in sex. Peter and Valkenburg (2008) suggest that there may be a greater sex-related memory association as a result of sexual arousal caused by exposure to internet pornography and that may eventually lead to chronically accessible sex-related cognitions (i.e. sexual preoccupation).
- If children and young people perceive sexually explicit content to be similar to real-world sex and if they see it as useful, then they are more likely to have attitudes towards sex that are casual and hedonistic rather than affectionate or relationship-based (Peter & Valkenburg, 2010a).
- More frequent internet pornography use increased children and young people's sexual uncertainty (e.g. the extent to which they are unclear about their sexual beliefs and values) (Peter & Valkenburg, 2010b).

- The use of internet pornography by adults (n=833) or by children and young people (n=1,445) was not predicted by their belief in the rape myth:ⁱⁱ “women say no when they mean yes”. Interestingly, adults were found to be more susceptible to the impact of internet pornography on beliefs that women say no when they mean yes than children and young people (Peter & Valkenburg, 2011).

Meta-analysis by Allen et al. (1996) found that education had an effect on young people’s beliefs and attitudes. According to the authors, post- and pre-experiment education appear to reduce the harm sustained by watching or reading sexually explicit materials. There was also a reduction in acceptance of rape myths after the experiment, despite exposure to sexually explicit materials. Further research examining the direct effect of educational programmes is necessary to provide further support for this promising meta-analysis.

Finding 3: Children and young people learn from and may change their behaviour because of exposure and access to pornography

“They won’t understand, but when they’re in that situation they will treat women like shit”

Workshop with young people

There is a general consensus in the literature that children and young people can learn sexual behaviours from observing the behaviours displayed in pornography (Alexy et al., 2009; Laville, 2012; Häggström-Nordin et al., 2006³⁷). For example, in a mixed methods UK study, 80 per cent of young people taking part in the survey said that watching pornography affected the way in which they had sex; during their focus groups, young people referred to the new ideas that they accumulated from watching pornography and suggested sexual positions that they were eager to try (Cowell & Smith, 2009). Furthermore, Bleakley et al. (2011b) found that exposure to sexualised materials was related to the likelihood of young people engaging in more sexualised behaviour because they perceived more social pressure to have sex.

Finding 4: Access and exposure to pornography are linked to children and young people’s engagement in “risky behaviour”

Table 5 shows that the majority of studies find that there are effects on “risky behaviour” (e.g. engagement in sexual practices from a younger age, engaging in riskier behaviours such as unprotected anal or oral sex, or the involvement of drugs and alcohol in sex) if young people have been exposed to sexually explicit materials (SEM) and/or pornography, with the exception of the study by Luder et al. (2011). However, it should be noted that the majority of this research is cross-sectional and correlational and therefore causal relationships cannot be established. Furthermore, these studies are from different cultural contexts and backgrounds, and therefore what is considered “risky behaviour” varies.

ii Defined by Burt (1980, p.217) as “prejudicial, stereotyped, or false beliefs about rape, rape victims and rapists”.

Table 5: Findings from studies that have looked at the link between access and exposure to pornography and children and young people's engagement in "risky behaviour"

If young people had	What "risky behaviour" had they engaged in?	Country	Authors and year
Been exposed to SEM	Higher acceptance and engagement in sexually permissive behaviours.	Taiwan	Lo & Wei, 2005
Been exposed to SEM	More liberal attitudes, more likely to smoke and consume alcohol.	India	Ghule et al., 2007
Consumed pornography	Half had anal intercourse. A quarter had one sexually transmitted infection. Half felt that pornography impacted on their sexual behaviour.	Sweden	Tydén & Rogala, 2004
Had frequent exposure to SEM	More likely to have had sex with a friend, group sex, oral sex and/or anal sex. Earlier age when they first had sexual intercourse. 71% believed that SEM influenced their peers' sexual behaviour. 29% believed that SEM influenced their own sexual behaviour.	Sweden	Häggström-Nordin, 2005
Had early exposure to SEM	More likely to have had oral sex and to have had sexual intercourse for the first time when younger. Linked with early engagement in sexual activities.	USA Canada	Brown & L'Engle, 2009 Skau, 2007
Used SEM	More likely to report having had anal sex, sex with multiple partners and using alcohol and drugs during sex.	USA	Braun-Courville & Rojas, 2009
Been exposed to SEM	Was not associated with early sexual initiation or with multiple sexual partners.	Switzerland	Luder et al., 2011

Vandoninck et al. (2010) report that more digitally literate young people (particularly boys) spend more time online and therefore encounter more risks. Mitchell et al. (2003a, 2003b) report that unwanted exposure is associated with risky online behaviour such as talking to strangers online, harassing or playing jokes on people online and accessing pornography. Wolak et al. (2007) found similar associations with wanted exposure (accessing pornography) and a link between greater unwanted exposure and harassment online. There is also some evidence that exposure and access may be associated with risky offline behaviours such as delinquency, rule breaking and substance use (Tsitsika et al., 2009; Wolak et al., 2007; Ybarra & Mitchell, 2005) and conflicting findings concerning exposure and access and depression (positive association with exposure: Mitchell et al., 2003a; Wolak et al., 2007; no association between access and depression or loneliness: van den Eijnden et al., 2008).

Another behaviour that has recently emerged (as mentioned in research question 1) and is frequently referred to as "risky" is sexting (Brown, 2011). Wide and uncontrolled circulation of sexting material

via social media has been argued to pose risks because the material can be used for bullying, maltreatment and exploitation (Ferguson, 2011). Also, according to Wolf (2012), online distribution of material generated via sexting has the potential to lead to self-harm and/or suicide. There may also be associations with substance use and abuse, being bullied or physically abused by a partner and depression (including contemplated and attempted suicide: Dake et al., 2012). Rice et al. (2012) and Ringrose et al. (2012) also talk about the risks associated with sexting and characterise it as part of a cluster of health risk behaviours in which many children and young people are engaged. For example, children and young people who sexted were more likely to report being sexually active and exhibited a trend towards unprotected sex during their last sexual encounter (Rice et al., 2012). Furthermore, Ringrose et al. (2012) observe that sexting is not a single activity but a range of activities that may be motivated by sexual pleasure but are often coercive and linked to harassment, bullying and even violence, and that the majority of that harassment is directed by young men towards young women.

What do we think we know but are less confident about?

Finding 5: Children and young people's age is related to how they understand and process pornography and therefore how it affects them

Only a few studies or components of larger studies have found that there are age differences in how children and young people process and are affected by pornography (Benedek & Brown, 1999; Buckingham & Bragg, 2003; Cantor et al., 2009³⁸). Livingstone et al. (2011) found that younger children were more upset by online sexual images than teenagers. Very young children (up to 9 years old) appear to confuse sexually explicit activity with violence, as they seem unable to distinguish between unfamiliar repetitive movements and auditory stimuli that resemble pain; this may mean that stimuli may have the same effect as viewing violence on television (sleep disturbances and nightmares: Benedek & Brown, 1999). Buckingham and Bragg's (2003) study with 9 to 17-year-olds in the UK found that younger children appear not always to understand sexual references or connotations; they often have partial knowledge of sexual relations which contributes to misinterpretation of references to sexual matters (especially in the form of innuendo or suggestion, as often appears in music videos). Also, younger children appear less aware of cultural differences and conventions in sexualised media. A retrospective study about exposure to pornography with undergraduate students indicated that younger viewers (5 to 12-year-olds) responded more to surface features of the materials (e.g. nudity) with confusion or guilt and that older viewers (13 and over) responded more to the plot elements (e.g. rape) with more anger, disgust and sadness (Cantor et al., 2009). A further US retrospective study with a female sample (Corne et al., 1992) found that early exposure to pornography was linked to subsequent rape fantasies for women, and to holding more supportive attitudes towards sexual violence against women. Although the studies appear quite rigorous in their methodologies, some are rather dated (i.e. the cultural milieu might have been different from that of the present) and others are retrospective, where the participants are referring to incidents in their past, and hence results must be interpreted with caution.

Young people recognise that pornography is omnipresent and most young people report its negative effects (such as a dislike of the materials available) and recognise the distorted messages that pornography conveys regarding sexuality and body ideals (in particular for younger children). A recent health survey in the London Borough of Havering (Mulley, 2013) showed that one in two young people surveyed felt that pornography affects relationships, and that they believed the government should help limit accessibility of online materials. But some young people describe the positive aspects of pornography (e.g. sexual knowledge, curiosity and inspiration) (Daneback & Löfberg, 2011; Löfgren-Mårtenson & Månsson, 2010; Mattebo et al., 2012). However, when describing the positive aspects, many young people link these to their desire for information to supplement, or in

lieu of, formal sex education; when formal education is not found, they turn to pornography as a substitute.

Finding 6: The effects of pornography on children and young people's sexual expectations are unclear

Few studies have asked children and young people directly about their sexual expectations in relation to their access and exposure to pornography. Two qualitative studies discussed expectations with slightly different emphases (Häggström-Nordin et al., 2006; Löfgren-Mårtenson & Månsson, 2010). Häggström-Nordin et al. (2006) asked young people to discuss the expectations that are inferred in pornography relative to the female body image. Participants reported that they have clear expectations about female inferiority and also body ideals (thinness and smallness in size) and male superiority (muscular and bigger in size). Young Swedish men (aged 17 to 21) in the Häggström-Nordin et al. (2009) study also reported that watching pornographic films influenced their behaviour, as they either fantasised about or actually performed acts inspired by pornography. Löfgren-Mårtenson and Månsson (2010) reported that young men were preoccupied with being able to perform similarly sexually, and for the same duration, as the men in pornography, while young women (in a similar finding to that found in the above study by Häggström-Nordin et al., 2006) expressed the view that women in pornography represented the ideal body type and that made them feel unattractive. Most mainstream pornography describes a narrow ideal of body type and sexual behaviour that creates unrealistic and limited expectations for young people.

Finally, Træen et al. (2004) – drawing on a Norwegian population survey – reported that the majority of their respondents mentioned that the use of pornography leads to greater openness about sexuality, it makes people's sex lives better and it is not harmful to human sexuality. They did, however, also state that it degrades women but not men, it is too easily available and it also leads to sexualised violence in society. Men and younger people and those of lower educational attainment were more likely to state that pornography helped with sexual enhancement. However, some important caveats of this study were: a) that it had a wide age span (15 to 91) and a mean age of 43, so we cannot be sure to what extent the views of children and young people are represented; and b) no definition of pornography was offered by the researchers. Participants were asked to report what pornography they had seen or used, and therefore we cannot be sure that all participants were referring to similar content as their responses were not controlled for in the analysis.

Despite the lack of research on young people's sexual expectations, there is growing evidence that indicates that young people are unhappy with the sex education they are receiving and that they increasingly use pornography, expecting it to educate and give information regarding sexual practices and norms (Allen, 2006; Flood, 2010; Hilton, 2007³⁹). Research conducted in the UK (Hilton, 2007) indicates that young male children (aged 16 to 17) would like pornography to be included in sex education classes and report that issues around sex and sexuality are not covered sufficiently. These young male children have increasing expectations that pornography will teach them aspects that are otherwise unavailable to them. Kubicek et al. (2010) found that young gay men rely on pornography and the internet to acquire information about anal sex, its nature and risks because it is not covered in sex education. Kendall (2004) raises concerns about the consequences of this for young gay men, particularly with regards to the hyper-masculinity portrayed in gay porn and how this may affect young men's developing identity and sexual expectations.

Finding 7: Exposure and access to pornography appear to be related to children and young people's perpetration of and victimisation through aggressive behaviour

"Makes out that how women are portrayed in pornography is correct and that women can be treated this way, offers a sense of entitlement – you might go up to a girl and just grab her boob 'cause you feel that you can"

Workshop with young people

There is a fair amount of research that links exposure to pornography with aggressive behaviour, but it has many limitations. Most of the research has focused on the links between exposure to pornography and perpetration of aggressive behaviour. For example, in the USA, while frequent exposure to internet pornography was not linked to increased levels of sexual aggression generally, for young men with a predisposition towards aggressive sexual behaviour, frequent consumption of pornography meant that they had four times the level of sexual aggression of young men who were non-frequent consumers of pornography (Ybarra & Mitchell, 2005). A longitudinal study, also from the USA, found that men who were exposed to pornography in early adolescence were more likely to engage in sexual harassment in middle adolescence; 80 per cent (n=967) of male participants reported having committed some form of sexual harassment and having used some form of pornography (Brown & L'Engle, 2009). Conversely, another longitudinal study from the USA found that 5 per cent of the children and young people in the sample reported having perpetrated some form of sexually aggressive behaviour (included in-person sexual assaults and technology-based sexual harassment and/or solicitation). However, children and young people who intentionally accessed violent sexually explicit material were six times more likely to be sexually aggressive than those who did not access it (Ybarra et al., 2011). The difference between the two studies in relation to sexual harassment (80 per cent compared with 5 per cent) can be explained by the much more comprehensive sexual harassment questionnaire used by Brown and L'Engle (2009) (including face-to-face and other forms of harassment) whereas Ybarra et al. (2011) asked about online harassment only.

Two recent Scandinavian studies found links between the use of pornography and sexually coercive behaviours (Kjellgren et al., 2010, 2011). Among Swedish young men, frequent use of pornography, and the use of violent pornography in particular, were more common among those who had displayed sexually coercive behaviour or had conduct problems than normal controls (Kjellgren et al., 2010). The sexually coercive behaviour and conduct problems young men also indicated that they had peers who watched pornography more often, or liked violent pornography more than controls, while sexually coercive behaviour males liked violent pornography and depictions of child sexual abuse more than conduct problems males (Kjellgren et al., 2010). Female high school students from Sweden and Norway who displayed sexually coercive behaviour had sexual intercourse with more partners, were higher in rape myth acceptance and had watched violent pornography significantly more than non-coercive females. They also appeared to have sold sex significantly more and were more likely to have peers who watched violent pornography (Kjellgren et al., 2011).

Developing the link between pornography use and perpetration of sexual aggression, Bonino et al. (2006) found that Italian young people (14 to 19 years old) who use pornography seem more likely to establish relationships with their peers characterised by greater tolerance towards unwanted sexual behaviour. Viewing pornographic films and videos was related to having been sexually harassed or forced to have sex, especially for young women. Pornography, violent forms in particular, may at least contribute to constructing an environment in which there is greater tolerance for and less disapproval of unwanted sex.

Fewer studies have investigated victimisation via aggressive behaviour linked vicariously or directly to pornography. A US sample found that young people who reported being frequently sexually victimised online or via text messaging were nine times more likely to report being the perpetrators of sexually aggressive behaviour compared with non-victims; these were young people exposed to or seeking pornography as well (Ybarra et al., 2011). An Ethiopian study found that 68 per cent of secondary school female participants experienced sexual coercion, with the strongest risk factors for sexual violence victimisation being frequent pornography use, multiple sexual partners and substance abuse (Bekele et al., 2011). Finally, Mitchell et al. (2003b) and Wolak et al. (2007) found that young people who reported being harassed or sexually solicited online or being interpersonally victimised offline also reported more unwanted exposure to pornography.

One possible developmental pathway has been proposed in a working paper by Meszaros (unpublished). This is referred to as the “mirror neuron system” and is an attempt to look at whether neural networks might display some biological differences; this approach would be similar to the idea that we are socialised through modelling behaviours from one another. However, no data to test this proposition exist currently and it would be very hard to determine the interactions between underlying biology and proximal influences on the neural architecture, so we must consider this with caution.

Finding 8: Exposure and access to pornography as a child or young person appear to be related to sexual offending

Relatively fewer studies have examined pornography’s relationship with sexual offending among children and young people (for a review, see Seto & Lalumière, 2010), but there are some tentative conclusions that may be drawn.

Many studies have focused on children and young people who have already been convicted of a sexual offence. Findings include the following:

- Juvenile sex offenders who used pornography were more likely “to engage in coerced vaginal penetration and forced sexual acts such as oral or digital penetration, to express sexually aggressive remarks (obscenities), and to engage in sex with animals” (Alexy et al., 2009, p.450) than those who did not.
- Among adolescent males with a history of physical sexual offences (n=256), early and inappropriate exposure to pornography may contribute to the development of antagonistic, unhealthy and distorted views of human sexuality and “glorification of promiscuity” (Hunter et al., 2010, p.146). Moreover, these authors argued that because children and young people normally would not have the opportunity to compare real-life experiences with actual sexual partners until later, they may be especially susceptible to internalising distorted pornographic images and may modify their behaviour accordingly (Hunter et al., 2010).
- A comparison of 284 male adolescent sexual abusers and 170 non-sexually offending delinquent youth (victims of sexual abuse were excluded from both samples) found that the sexual abusers reported more exposure to pornography before they were 10 years old than non-sexual abusers and were more likely to continue to use it as children and young people. However, there was no relationship between pornography consumption and sexual crime per se (Burton et al., 2010). Similar findings were first shown by Zgourides et al. (1997), who found a negative correlation between exposure to pornographic videos and sexual offences in adolescent sex offenders.
- Ongoing unpublished research conducted by Bulkley examines juvenile sex offenders in the USA and their risk of future reoffending and need for treatment. Two-thirds of the young offenders interviewed admitted to having viewed pornography on multiple occasions prior to their sexual

offending. These findings suggest that pornography exposure may be a contributing factor to sexual offending, and that youths who are exposed to it may draw on it heavily in conjunction with their offending behaviours. However, as this research has not been reviewed or published yet, these data should be viewed with caution and it is unclear whether the associations are direct, nor is it clear whether and how they might interact in conjunction with other risk predictors.

Other studies asked adult sex offenders retrospectively about their pornography use as children or young people. For example, in a Canadian sample, adolescent exposure to pornography was a significant predictor of the elevation of violence (e.g. an increase in victim humiliation) but was also linked with a releasing or cathartic effect of pornography (e.g. there was less physical harm to the victim if pornography was used prior to the attack: Mancini et al., 2012). These effects were not found with the offenders' use of pornography as adults, leading the authors to conclude that pornography affects offenders' propensity to degrade victims differentially over the course of their lives.

Finally, a Norwegian study explored the links between pornography access and/or exposure with sexual offending in a sample of non-convicted young people. It reported that young men's likelihood of engaging in sexual activity with children was linked with frequent use of pornography and also with having peers and friends with a positive interest in violent pornography and depictions of child sexual abuse (Hegna et al., 2004). This is the only study that looked at pornography and sexual activity with children in a non-convicted youth population, and therefore generalisability and interpretation should be treated with caution.

Finding 9: Exposure and access to pornography affect children and young people's perception of risk and danger

Several studies included a component on the attitudes of young people and children towards pornography and sexualised media; however, the findings are conflicting (e.g. Chetty & Basson, 2006; Livingstone & Bober, 2003; Lo & Paddon, 2000⁴⁰). Some consensus is apparent: young people seem to be aware of the dangers of online pornography, but feel that they have the coping skills necessary to deal with them. However, there appears to be a "third person effect", with many reporting that people younger than themselves are more in danger from online sexualised materials.

- Livingstone and Bober (2003, UK component of the EU Kids Online project) found that all young people asked (10 to 19 years) reported that they felt able to protect themselves from the dangers of pornography online, but that younger children should be actively protected. Also, some young men did not wish to see pornography restricted (Livingstone & Bober, 2003).
- Similar results were reported by Löfgren-Mårtenson and Månsson (2010) from a Swedish sample of young people (14 to 20 years) who expressed feelings of both normalisation and ambivalence towards pornography. They felt that it was a source of knowledge, information and sexual arousal, but also that it functions as a lens through which body ideals and sexual performances are viewed. These Swedish young people also reported having developed skills to deal with pornography in a sensible and reflective manner, but that younger people should be protected against exposure to it (Löfgren-Mårtenson & Månsson, 2010).
- This was also found in earlier studies (e.g. Lo & Paddon, 2000), where participants thought that pornography had a more negative influence on other people than on themselves.
- Half of Livingstone and Bober's (2004, 2005) UK sample (9 to 19 years) reported that they were not affected by watching pornography online; however, a significant minority (14 per cent) said that they did not like it. Furthermore, 45 per cent of the 18 to 19-year-olds who viewed pornography

online and offline reported that in hindsight they thought they were too young when they were first exposed to it (Livingstone & Bober, 2005).

Although these studies are very informative and contain a very large sample of participants, the details of their methodologies and analyses are not always clear. However, similar attitudes have been found in studies with smaller samples; for example, most of the 9 to 17-year-olds from the UK in Buckingham and Bragg's (2003) study, even those who condemned pornography, considered it a part of everyday life. Children's discourse in this study is again a mixture of fascination and disgust. Chetty and Basson's (2006) survey in South Africa, conducted as a direct comparison to Buckingham and Bragg's UK study, found very similar results; the vast majority of the sample (73 per cent of 13 to 17-year-olds) reported that watching pornography does have harmful effects on people. Furthermore, 51 per cent reported that watching such films made them more curious about sex, but also 42 per cent reported feeling uncomfortable when watching them. Fewer young people in this sample reported not being "bothered" about what images they came across (38 per cent), compared with 54 per cent of UK young people (Chetty & Basson, 2006).

The EU Kids Online project reported that the risks associated with online activity (e.g. exposure to pornography, bullying, receiving sexual messages, contact with people not known) were not necessarily experienced by the majority of children as either upsetting or harmful (Livingstone et al., 2011). Mattebo et al. (2012; 16 to 19-year-old Swedish youths) report that the young people in their study said pornography is widespread but they appeared to understand that there is a discriminatory sexuality illustrated in pornography in general (usually dominant man versus subordinate woman). They described pornographic messages as fictitious and portraying a distorted reality (with distorted body ideals and messages about sexual techniques and relationships). Even though young people were able to distinguish between fiction and reality in this sample, they also expressed ambivalent feelings towards pornography, such as anxiety and fear but also knowledge and inspiration (Mattebo et al., 2012). Contradictory findings were reported by Peter and Valkenburg (2010a), who found that children and young people's perceptions of the social realism and utility of sexually explicit material increased when they were frequently exposed to it. Why might the Swedish young people understand the distinction between fiction and reality when a Dutch sample appears unable to make that distinction? As discussed in research question 1, cultural differences, differences in sex and relationships education (SRE) and differences in the studies' methodologies and analyses may explain this disparity, but more systematic comparisons are necessary to be able to draw meaningful conclusions. Nevertheless, a more recent study stemming from a qualitative open-ended question put to the children involved in the EU Kids Online project (Livingstone et al., 2013) indicates that, in children's own words, their risk perceptions place pornography (named by 22 per cent of children) and violent content (18 per cent) at the top of their online concerns for themselves and their peers.

A smaller number of research articles report positive attitudes towards pornography or erotic materials. For example, young people (aged 14 to 19) in the USA who took part in focus groups reported that accessing sexually explicit websites had no negative effect on them (Cameron et al., 2005). The authors view that finding as notable and potentially problematic, as it contradicts previous findings, but there is a handful of studies that have found similar results. For example, in an earlier American sample considered by Cowan and Campbell (1995; mean participant age 14.7), 60 per cent of the boys in the sample believed that they had learned about sex from watching pornography; the figure for the girls was 47 per cent. Furthermore, Morrison et al. (2004) found that viewing sexual materials is linked with less sexual anxiety and more sexual esteem (but their participant age range of 17 to 42 is problematic for generalisation).

What don't we know?

Finding 10: We do not know what effects the cultural context has on young people's attitudes and behaviours towards and stemming from pornography

Some studies included in this REA are culturally bound and sample-specific and we do not know whether the findings can be generalised for the UK context; for example, Women's Forum Australia's (2008) discussion regarding aboriginal children's use of pornography; Wingood et al.'s (2001) finding that Black American children and young people frequently exposed to pornography are less likely to have used condoms; Stulhofer et al. (2008), who reported links between pornography and sexual compulsiveness in a Croatian sample; and findings from Lo and Wei's (2005) Taiwanese sample, Ghule et al.'s (2007) rural Indian sample, Irala et al.'s (2009) Philippines sample, Kim's (2001, 2011) Korean sample, Mesch's (2009) Israeli sample, To et al.'s (2012) Hong Kong sample, Wong et al.'s (2009) Singapore sample and Yu's (2012) literature review on Chinese teenage sexual attitudes.

We also do not know whether we have an accurate representation of pornography in all these studies. Some offer a clear definition of pornography for their study but others do not, making it hard to establish what we can compare between studies and samples (e.g. in the case of Steinberg and Monahan (2010), they report "sexy media" but do not say what that includes). Furthermore, nowadays it is suggested that more explicit and hard-core pornography is widely available, and some of the longitudinal studies and reviews that assess older studies may not have included such types of pornography (e.g. Edwards, 1998; Greenfield, 2004; Kanuga & Rosenfeld, 2004⁴¹).

Finding 11: We cannot infer causality

Research on the effects of pornography on children and young people's sexual expectations, attitudes and behaviours is largely cross-sectional and correlational, and so we are unable to infer causality and any interpretation of the results should be cautious. Because of the nature of the topic, and the ethical implications of speaking to children and young people about their sexual experiences, experimental manipulations of these variables are not possible. We are able to link certain behaviours and attitudes with exposure to pornography, and we can predict certain others, but we do not know whether exposure to or accessing pornography causes attitude or behavioural change, nor whether the attitudes children and young people hold before access or exposure to pornography may make them more likely to seek out pornography.

Finding 12: There is much we still do not understand about young people's feelings towards and perceptions of pornography

We know that a large number of people involved with children and young people (including parents, guardians, educators and carers) are concerned about their exposure to pornography and sexually explicit materials, and how this exposure may impact on their attitudes and behaviours and lead to potential conformity to the sexual stereotypes presented in this material (Bailey, 2011; Flood, 2009; Independent Parliamentary Inquiry into Online Child Protection, 2012⁴²). However, we do not yet have a clear picture of how young people themselves feel about pornography and pornographic materials, and what it is that they perceive when watching these materials (Mulholland, in press; Varnhagen, 2006). Some researchers maintain (Attwood, 2002, 2011; Bale, 2011; Chronaki, 2013) that we do not know how children feel about pornography because of a skewed/negative/moralistic viewpoint when asking them questions about their use and access to it, and when assessing their answers. There are also other factors, such as sexuality and sexual identity, that are largely ignored in present research (Billinghurst, 2009; Chronaki, 2013).

Finding 13: We do not know whether pornography leads to sexual addiction and compulsivity

There are several people who consider pornography to be linked with sexually compulsive behaviour, but there is no systematic evidence regarding this (e.g. Boies et al., 2004; Freeman-Longo, 2000; Katehakis, 2011). According to Boies et al. (2004), there is little information available (apart from clinical observation) on sexually compulsive behaviour of children and young people and the link to pornography. Katehakis (2011) talks about the possibility of pornography leading to sexual addiction and compulsivity by being relatively inexpensive, easy to access and easy to hide. She maintains that when masturbating to porn in an isolated setting, the adolescent brain is being shaped around a sexual experience that is very particular and potentially void of feelings of love or compassion, which are normally expected in reciprocal romantic relationships. She postulates that the adolescent brain will then be trained to expect a dopamine rush from real-life sexual experiences, and, when this is not present, engagement in riskier behaviours in order to find that rush will emerge, leading to potential sexual pathology. At the moment, this is hypothesised as a potential impact; Katehakis (or others) have yet to test it empirically.

What do we need to know?

High priority

This REA highlights a number of areas for further research in the attitudinal and behavioural component of pornography. There is a lack of consensus in the literature, making it difficult to compare across studies. The following research questions therefore deserve our attention:

- How are children and young people's attitudes related to exposure and access to pornography (as there appears to be conflicting evidence)?
- How can children be protected from risk factors that are associated with aggressive, sexually risky or offending behaviour (Billinghurst, 2009)?
- What is the role of pornography in shaping sexuality, sexual identity and the ability to develop and maintain intimate relationships (Attwood, 2002, 2011; Billinghurst, 2009; Chronaki, 2013)?
- How do attitudes towards pornography differ for children and young people depending on their sexual circumstances (Smith et al., unpublished)?
- Livingstone and Bober (2003) suggest that we need to systematically examine the gap between people's use of the internet and the impact of that use.
- Exactly how are young people's behaviours affected by the consumption of pornography?
- What role does the cultural context surrounding pornography (e.g. acceptability, availability, normalisation) play in explaining the differences found between old and new studies on pornography (e.g. Löfgren-Mårtenson & Månsson, 2010; Owens et al., 2012)?
- Are children and young people's own views and beliefs about pornography affected by societal norms about sex, gender relationship and sexual violence, and also general issues of socialisation (e.g. Johansson & Hammarén, 2007; Löfgren-Mårtenson & Månsson, 2010)?
- What are the educational needs and preferences of young people and how should effective resources be designed (e.g. gay and bisexual youth: Kubicek et al., 2010; young people's views on desirable SRE: Hilton, 2007)?

- What actions do educators, therapists and researchers looking into human sexuality need to take to update their education programmes to include the latest data on internet sexuality (Billinghurst, 2009 Boies et al., 2004)?
- We need to further examine the “third person effect” (where other children need to be protected but not themselves) that many young people report with regards to the effects of pornography and we need to address this issue in SRE.
- What are the effects that access and exposure to pornography have on LGBT children and young people?
- What are the effects that access and exposure to pornography have on ethnic and cultural minorities within the UK?

Low priority

Generally, we need more longitudinal studies on how access and/or exposure to pornography affect attitudinal and behavioural change among children and young people. We also need to revisit the methodologies used (e.g. questionnaire versus face-to-face interviews) and consider what the most effective ways are not only to access wider populations but also to obtain richness of information (Chronaki, 2013). We also need to answer the following specific questions:

- What is the effect of other sexualised media, such as advertisements, on young people and children (e.g. Buckingham & Bragg, 2003)?
- Are there links between sexualisation, objectification of young people and tabloid media (e.g. Papadopoulos, 2010)?

Research question 3: Do literature reviews and meta-analyses on the associations between access and exposure to sexualised or violent visual imagery on children and young people bear relevance to the issues addressed by this REA?

This part of the review examines the meta-analyses and literature reviews pertaining to the effects that access and exposure to sexualised or violent visual imagery have on children and young people. There were 116 articles, reports and book chapters of relevance. There were roughly equal numbers of studies that looked at the effects of viewing sexualised and violent images on young people. None directly compared the effects of pornography and other sexualised imagery, although eight made some reference to the one when considering the other. The majority of research papers originated in the USA, followed by European studies (Sweden and the Netherlands in particular) and other studies including African, Asian and Canadian studies. Very few directly relevant studies were conducted in the UK.

Table 6: Summary of findings for research question 3

Question	Findings
What do we know and are confident about?	1) Exposure to sexualised and violent imagery affects children and young people.
	2) There is a link between violent attitudes and violent media.

Question	Findings
What do we think we know but are less confident about?	3) Viewing sexualised and/or violent imagery can affect children and young people's attitudes and sexual and violent behaviour, which may in turn affect their attitudes towards relationships. 4) Highly contentious and contradictory findings exist on the impact of violent imagery on children and young people that may confound our understanding of the effects of pornography. 5) There is emerging but contradictory evidence about the effects of other sexualised imagery to which children and young people are exposed through film, music, advertising, mainstream and specialist media.
What don't we know?	6) We do not know what effect viewing violent images has on children and young people. 7) We cannot draw conclusions about causality. 8) We do not know the mechanisms through which changes occur and whether changes are long term. 9) We do not know whether there are differences or similarities between the effects of pornography and the effects of other sexualised imagery.
What do we need to know? High priority	1) Do exposure and access to violent media cause violent attitudes? 2) Why do children and young people watch sexualised or violent media?
What do we need to know? Low priority	3) Do video games affect children and young people in the same ways as other forms of violent and sexualised media? 4) Are children and young people's changes in attitudes sustained beyond initial exposure and/or access to pornography?

What do we know and are confident about?

Finding 1: Exposure to sexualised and violent imagery affects children and young people

The available research investigating the links between children and young people's descriptions of relationships and their access to sexualised or violent imagery is inconclusive and contradictory, and there is little of which we can be confident. We believe that youth culture has been affected by violent and sexual imagery (Anderson et al., 2010; Löfgren-Mårtenson & Månsson, 2010; Peter & Valkenburg, 2007), that children and young people are concerned about online pornography (Livingstone et al., 2013), and that viewing such imagery can have effects on children and young people (Anderson & Bushman, 2001). However, further understanding of how children and young people may be affected, in what ways they may be affected and how long term the effects may be is needed. There is a substantial body of contradictory evidence and within that evidence there are methodological, generalisability and definitional problems with the available empirical work. Studies vary widely in the number, age and ethnicity of the participants involved. Studies carried out in countries other than the UK may not be generalisable to young people here. Possibly most problematic is the issue of what the author of each study considers to be pornographic, sexually

explicit and/or violent. The studies rarely give a description of the content of the media viewed by the young people and often rely on self-reporting.

Finding 2: There is a link between violent attitudes and violent media

As far back as 1994, there was research to support the idea that viewing violence through various media causes violence (Paik & Comstock, 1994). This link has never been demonstrated and causality has not been established. As such, all we can be confident about is that children and young people who hold more violent attitudes access more violent media (Anderson, 2004; Anderson & Bushman, 2001; Boxer et al., 2008⁴³).

What do we think we know but are less confident about?

Finding 3: Viewing sexualised and/or violent imagery can affect children and young people's attitudes and sexual and violent behaviour, which may in turn affect their attitudes towards relationships

Most of the studies found for this REA focused exclusively on young people's attitudes, sexual behaviour and violent behaviour and links with viewing sexualised and/or violent imagery. It may be the case that this affects their attitudes towards relationships, but we are less confident of the evidence for this and there is no strong evidence that young people who view sexualised or violent imagery hold discernible attitudes towards relationships or that those attitudes are different from those of young people who do not.

In 1996, Schooler and Flora stated that violent media affects young people's attitudes and behaviour and that the viewing of violence shapes ideas of appropriate behaviour; by extension, this could affect their views of relationships. More recent studies have suggested that exposure to sexualised images has an effect on how young people view others. For example, Papadopoulos (2010) concluded from numerous studies in her review that young people who view sexualised imagery hold certain body image ideals and the idea that to have sex you must look a certain way (Botta, 2003; Schooler et al., 2004; Thompson & Stice, 2001). Papadopoulos (2010) also concludes that the viewing of pornography leads young people to see sexual relationships as physical and devoid of any emotional or caring element and that young people who view pornography have ideas about sex and sexual relationships that are unrealistic. Viewing sexualised media has been linked to sexual risk taking, which could also imply a view that relationships are focused on sexual pleasure which is separated from care for another individual (Sinković et al., 2012). Other studies have linked it to reduced fear of contracting AIDS (Lemal & Van den Bulck, 2009), having sex earlier (Kraus & Russell, 2008) and having false expectations of sex (Häggström-Nordin et al., 2006).

There is evidence that shows a link between the marginalisation of social networks (for example, spending time alone, less commitment to families, fewer pro-social attitudes and less attachment to school) and pornography viewing in young people (Mesch, 2009). However, this study is correlational and it is possible that the young people studied had a pre-existing limited social network that resulted in the perceived need to enter a virtual world of sex and relationships. Also, this study was carried out on an exclusively Israeli population and focused on pornography consumption. Peter and Valkenburg (2010) describe similar findings, however, explaining that young people who use sexually explicit material view relationships as casual and functional and show lower levels of affection. These studies are also correlational.

This finding was replicated by Ward et al. (2005), who found in their lab study of 152 14 to 18-year-old African American young people that more frequent music video viewing was associated with more

traditional gender role acceptance and stereotypical attitudes. In 2006, Ward and Friedman found similar results when investigating “sexy prime-time” television shows. They found significant results for watching such shows and acceptance of traditional gender roles, views of sex as recreation and sex being male-driven with females viewed as sex objects. It is interesting to note that, contrary to Ward et al.’s (2005) finding, the results for music videos were not significant. The authors point out in their limitations that the sexual attitude subscales had relatively low scores and they looked at only three genres of media. Ward (2002) carried out a study with 259 American 18 to 22-year-olds and found that more frequent television viewing was associated with more sexual stereotyping, and that young women who viewed sexual stereotypes were more likely to endorse them. This result held even when sexual experiences and demographics were controlled for. However, this older age range of participants causes some difficulties when generalising to children and young people.

Although sexual stereotyping does not necessarily relate to how children and young people describe relationships, many of the studies seem to focus on this, rather than directly speaking to children and young people about how they view relationships. However, contradictory evidence exists, and the impact of viewing sexualised images appears to have positive effects on some young people and their attitudes towards relationships. For example, Martino et al. (2005) found that, among 1,229 12 to 17-year-olds in the USA, White and African American children and young people who regularly watched sex on television were more confident about their ability to have safe sex. This effect was not found for Hispanic young people. Morrison et al. (2004) found further positive effects of viewing sexually explicit material (such as television shows with sexual content, DVDs with sexual content or sexual visual material on the internet), in the form of heightened sexual confidence and higher levels of sexual esteem, and an inverse relationship between exposure to sexually explicit materials and sexual activity. This would suggest positive attitudes towards relationships. Conversely, Morgan (2011) found that frequency of viewing sexually explicit material correlated negatively with relationship satisfaction, so the more sexually explicit material viewed the less satisfied the individual was with their sexual relationship. As bivariate correlations were carried out in this study, causality is not possible to establish neither is a cut-off point or critical number of viewing hours as only a correlational relationship was established. Viewing of sexually explicit material was also associated with three of the sexual behaviours measured: lower age of first sexual experience, more sexual partners and casual sexual partners, again, a correlation was established. . It is worth noting that both of these studies were carried out with American college students: Morgan’s study had an age range of 18 to 30 and the age range was 17 to 43 in Morrison et al.’s study (2004), which makes it difficult to be confident in generalising the findings to children and young people under 18 years of age.

In a study of young Nigerian men, Izugbara (2005) found that sexually explicit Nigerian chants, passed down orally through generations of men, affect young men’s attitudes towards young women, normalising sexual coercion and the use of force to obtain sex. Due to the specific nature of a study of this kind, there is difficulty in generalising to a UK population. Despite there being a large Nigerian community in the UK, this study was specific to the Ngwa tribe in the south-east of the country.

Finding 4: Highly contentious and contradictory findings exist on the impact of violent imagery on children and young people that may confound our understanding of the effects of pornography

There is a wealth of opinion suggesting that viewing violence causes violence and leads to violent attitudes and acceptance of violence. In 1997, a study of 1,139 secondary school students in Hong Kong found that media variables are better predictors of adolescent deviant behaviour than family and school factors, as they remain significantly correlated with deviant behaviour even when other variables are controlled for (Cheung, 1997). However, the best predictor of deviant behaviour in this

study was the student's peer group. Over 10 years later, in a study including 820 young people from the USA (high school students and young offenders), Boxer et al. (2008) found that violent media exposure was significantly related to violent behaviour and aggression, even after controlling for the effects of sex and age. Ybarra et al. (2008) extended the scope of study in this field to investigate the links between viewing violent media and engaging in extremely violent behaviour: shooting or stabbing, aggravated assault, robbery and sexual assault. Five per cent of 1,588 American 10 to 15-year-olds reported engaging in extremely violent behaviour. The authors concluded that exposure to violence in the media is associated with concurrent reports of extremely violent behaviour and that the newer forms of violent media seem to be especially concerning. They did, however, acknowledge the effect of contextual and individual factors such as family factors and substance use. Moving away from individual studies, Villani's (2001) literature review concluded that media that is violent, gender-stereotyped, sexually explicit, drug- or alcohol-influenced or showing human tragedy changes a child's world view and increases high-risk behaviours, altering his or her capacity for successful, sustained human relationships. In 2010, Anderson et al. carried out a meta-analysis and again it was concluded that viewing violence causes aggressive cognitions, affect and behaviour and decreased levels of empathy. For this analysis, however, they grouped empathy with desensitisation, which is problematic as they are very different aspects of personality and this may well have affected the results on this variable. Again, these findings were also correlational and not causal.

Various explanations for the impact of violent imagery have been proposed:

- Schooler and Flora (1996) suggested that media influences are cumulative and mutually reinforcing and they stated that repeated exposure to prominent violent media messages, acts or social scripts of violence are especially damaging. They argued that mass media depictions of violence can shape young people's attitudes regarding behaving aggressively and how acceptable and common this type of behaviour is.
- Anderson and Bushman (2001) found that playing violent video games heightened levels of aggression in males and females and decreased pro-social behaviour. They argued that there are long-term effects of aggressive personality and that exposure to violent video games is linked to affect, cognition and physiological arousal. However, this study is correlational and therefore causality is not established.
- Bushman and Huesmann (2006) found modest but significant effect sizes for exposure to media violence on aggressive behaviours, emotions and cognitions and that the long-term effects of viewing violence are more pronounced for children and young people than for adults. This is because, when younger, it is easier to encode new scripts, schemata and beliefs.
- Lomonaco et al. (2010) suggest that social learning theory explains the effects of violence and the media, with people being less affected when there is parental explanation and guidance.

Not all studies seem to find that viewing, witnessing or perpetrating (video game) violence leads to real-world violence:

- Boyle and Hibberd (2005) conclude that it is not possible to claim a causal link between video game violence and actual violence.
- Browne and Hamilton-Giachritsis (2005) point out that short-term effects on young people when exposed to violent media do not necessarily mean there are long-term effects and that the effect of viewing violent media is stronger for those with a predisposition to aggressive behaviour.

- Ferguson and Kilburn's (2009) meta-analysis concludes that the evidence suggesting that media violence affects children and young people is driven by poor methodology, inadequate aggression measures and lack of consideration of other possible variables.
- Savage (2004) reiterates that, despite persistent publications stating that viewing violence causes violence, the body of published, empirical evidence does not support this view. The empirical evidence that exists is too flawed for conclusions to be drawn from it to either support or refute this hypothesis.

For every study that concludes that viewing violence causes aggression in children and young people, there seems to be one that contradicts this. Studies such as Willoughby et al. (2012) conclude that viewing violence in video games causes violence in young people even when other potentially significant factors are controlled for, and in the same year Markey and Markey (2012) found that only some people are affected by violent video games and those who are have pre-existing dispositions that make them susceptible. It seems that the relationship between young people viewing violence and their attitudes and behaviours is complex and multifaceted, with family, peers and society all playing a part in the effect on any individual young person. It seems that there are other, and possibly many, factors that contribute to the translation from viewing violence to acting violently. Although this study was looking predominantly at sexual behaviour, L'Engle et al. (2004) found that mass media explained only 13 per cent of variance when looking at young people's attitudes; other factors that were equally or more influential included parents, religion, peers, grades at school and demographics.

There are studies that go beyond merely attempting to establish or refute the link between media violence and the attitudes and behaviours of children and young people. For example, a case study of a 13-year-old American youth who committed media violence-inspired sexual homicide describes a host of individual factors that combine with media violence to lead to violence, including developmental abnormalities, neuropsychiatric vulnerabilities, family dysfunction and mental illness (Myers et al., 2003). This case raises the point that the media violence relationship is not a direct one. However, this is an extreme case and not the type of behavioural or attitudinal change most studies investigate. Gentile and Stone (2005) state that it is unhelpful to think of the effects of video games in terms of polarised "good" or "bad" and that video games could have both good and bad outcomes simultaneously; they may, for example, both lower school attainment but make good drivers. It is important, therefore, to understand the complexity of this aspect of many young people's lives. They acknowledge that video games are one factor that can contribute to aggression in young people but it is not the biggest risk factor for aggression. They suggest that one reason why media is often discussed as a problem is that it is an easily controlled factor. Taking the example of L'Engle et al. (2004), where 13 per cent of variance was explained by viewing media violence and 54 per cent was explained by peers, family, schools and demographics, the easiest factor for the government to address is media violence, for example by introducing parental advisory stickers or age certificates for video games, films etc. The Swedish Media Council (2012) highlights the many methodological issues in the literature looking at violent media and suggests that aggressive people like playing violent video games and that they are not caused to be violent by such games; the most likely explanation is that underlying factors affect both aggression and violent video game preferences.

Finding relevance between the literature on the effects of violence on attitudes and behaviours and the effects of pornography is difficult at best. The numerous methodological issues that exist in the literature, as stated above, mixed with the lack of studies that consider both violence and pornography makes this task one of presumption at this stage. There are a few studies that have made some links in this area, but, for differing reasons, they are far from ideal. For example, a meta-analysis of 217 studies of 6 to 21-year-olds looking at television violence found an especially strong

effect of erotica with or without violence and that depictions of women as promiscuous encouraged callous attitudes towards women (Paik & Comstock, 1994). Also relevant here are the studies of offenders that have linked pornography use to sexual violence reviewed for research question 2 (e.g. Alexy et al., 2009; Bonino et al., 2006; Burton et al., 2010; Mancini et al., 2012).

There are many problems with retrospective studies and with using only self-reporting as a measure in a scientific study. The Swedish Media Council (2012) highlights the lack of cross-sectional or longitudinal studies. In its review of the literature, the Council found that only 11 per cent of studies into media violence are longitudinal. It also highlights that the term “aggression” is often poorly defined and measured. It criticises the laboratory method for studying aggression, pointing out that there is a great deal of difference between suggesting an ability to engage in a particular behaviour and real-world aggression. Finally, studies that attempt to link media violence to aggression do so at the exclusion of other possible causes of violence, and mediating factors are considered very rarely.

Finding 5: There is emerging but contradictory evidence about the effects of other sexualised imagery to which children and young people are exposed through film, music, advertising, mainstream and specialist media

Poulter (2009) argues that because young people often have open, unfiltered access to certain media that are frequently sexualised, such as Twitter, YouTube and music videos, this increases the normalisation of these forms of media and perhaps makes their content feel more “realistic”.

Other forms of sexualised media have been found to have a range of negative effects on children and young people. Examples include the following:

- Studies of music videos exclusively have shown a negative impact on adolescent males’ attitudes towards females (Bailey, 2011).
- Studies of sexualised media (not classified as pornography) have found damaging effects on body image and a feeling of pressure to have an “ideal” body image as described by media ideals (Marvin, 2012).
- The use of sexually explicit material is related to whether individuals hold casual rather than affectionate attitudes towards relationships (Peter & Valkenburg, 2010a).

However, this relationship seems to be complex, multifaceted, contradictory and based on correlational findings. Wright’s (2009) literature review on sexualised messages in mass media highlights differing effects depending on the form of media, and differing messages. For example, female adolescents who primarily watch television comedies will view sex as being a risk-free activity, whereas female adolescents who read teen magazines will be exposed to a lot of information about sexually transmitted infections and contraception. Furthermore, in a re-analysis of Browne and Hamilton-Giachritsis’ (2005) data, Steinberg and Monahan (2010) found that viewing sexual images does not necessarily lead to early sexual experiences despite other research suggesting that it does (e.g. Kraus and Russell, 2008). Löfgren-Mårtenson and Månsson’s (2010) research with Swedish children and young people found that most young people were able to distinguish between the fantasy of sexually explicit material and real-life sexual interaction. These studies have been conducted in many different countries so there may be educational or cultural differences that account for the contradictory findings.

The format through which children and young people are exposed to sexualised media appears also to be important, especially if it is interactive; the internet has been found to have a greater influence on sexual attitudes than all other forms of media (Lo & Wei, 2005). The content of the sexual media

also seems to have an effect. A questionnaire study of 703 11 to 17-year-olds found complex relationships dependent on gender and on the messages about relationships and power dynamics in the prime-time television viewed (Tolman et al., 2007). Young women who saw “good girls” as setting sexual limits felt more comfortable voicing their own sexual needs than those who saw shows containing the traditional heterosexual script.ⁱⁱⁱ These latter girls and young women showed an inhibited ability to assert themselves sexually. However, this finding should be considered with caution as only a small amount of variance was explained, highlighting that prime-time television is only one means by which children and young people are exposed to this type of subject matter. No studies have considered the cumulative effect of multiple sources of sexualised media.

What don't we know?

There is some contradictory evidence with regards to the effect of viewing sexual or violent imagery on attitudes towards relationships, as there is evidence to suggest that “sexy media” is not linked to early initiation of sexual behaviour (Steinberg & Monahan, 2010; Martino et al., 2005) and that viewing media that includes sexual talk does not affect attitudes (Tolman et al., 2007). However, Pardun et al. (2005) found that the more sexual media adolescents see, the more likely they are to be sexually active and to anticipate future sexual activity.

Finding 6: We do not know what effect viewing violent images has on children and young people

There is no clear evidence about the effect of viewing violent images on attitudes towards relationships, predominantly because studies do not seem to directly ask young people to describe relationships or discuss their feelings about them; studies tend to focus on measuring behaviour or attitudes. It seems that the effect that violent images have on young people is contingent on the form of the media viewed (Lo & Wei, 2005; Stermer & Burkley, 2012; Ybarra et al., 2008), the support network around the young person (L'Engle et al., 2004), social learning (Hunter et al., 2010) and other key demographic factors, not least gender, which is consistently found to be a significant factor when looking at the effect of both violence and sexualised media (Anderson & Bushman, 2001; Kalof, 1999; Boxer et al., 2008⁴⁴). The issue of gender is crucial: studies show that when considering violent or sexualised imagery, young women and men differ in how they are affected and what their attitudes and preferences are. Most of the existing research on violent and sexualised content in video games has found that males are much more affected by it than females (Stermer & Burkley, 2012). It is unclear why this gender difference occurs, especially in regards to the effects of sexualised content. A possible explanation proposed by Stermer and Burkley (2012) is that of in-group and out-group bias: that is, men's sexist attitudes are geared towards an out-group whereas women's sexist attitudes are geared towards their own in-group.

Finding 7: We cannot draw conclusions about causality

There is currently no information available on the issue of causality; however, this will be addressed in full at the end of this section as the issues pertaining to causality apply to all findings for this research question.

iii The heterosexual script is a specific set of eight complementary codes that depict expectations of males and females in romantic and sexual relationships (Kim et al., 2007). The heterosexual script perpetuates ideas of male dominance and female submission because it represents a traditional understanding of gender.

Finding 8: We do not know the mechanisms through which changes occur and whether changes are long term

The confounding results of studies into sexualised and violent images are difficult to fully disentangle. The studies that assess the impact of viewing violence on attitudes and behaviours tend to be lab-based and involve the researchers exposing participants to violence, then immediately asking them about violence or testing attitudes towards women, sexism and rape myths. This raises several methodological and theoretical issues. Firstly, rarely is a comprehensive set of measures taken pre-exposure, and, as such, it is difficult to conclude that the attitudes held came from the exposure to violent media. These studies are able to find changes in attitudes towards females and/or violence (Boxer et al., 2008; Bushman & Huesmann, 2006) but they do not consider long-term behaviour or attitude change in people playing violent or sexual video games. Secondly, there is no understanding of the mechanisms through which the changes (if any) in attitudes occur; it is possible that exposure to sexist themes in video games simply facilitates accessibility to pre-existing sexist thoughts (Stermer & Burkley, 2012). Stermer and Burkley (2012) also point out that many studies fail to describe how participants in studies are exposed to the violent or sexualised video games, and, as described above, the interactive nature of these games is considered key to their influence: merely watching a clip of a game may not be representative of either its actual impact or the experience of playing it more fully. A further issue is that of time; most studies test attitudinal change immediately after exposure. This tells us little about long-term attitude change or, more importantly, behavioural change. Longitudinal studies are scarce and would provide invaluable information (Stermer & Burkley, 2012).

Finding 9: We do not know whether there are differences or similarities between the effects of pornography and the effects of other sexualised imagery

To date, there is no research to show if different forms of sexual media have differing effects; research therefore needs to be conducted in this area. We do not know if there are differences or similarities between pornography and other sexualised imagery, as different genres or media have not been compared sufficiently, thoroughly or systematically. Related to this, we do not know what children and young people consider pornography or sexually explicit media to be. In studies they may be asked if they use or view pornography or sexually explicit media, but we do not know what images, films or media they are thinking of when answering “yes” to these questions. This means that different studies may be working with numerous definitions, as it would depend on the idea of pornography held by the individual participants. It is not possible to compare pornography with other forms of sexualised imagery if what we are discussing is not specified in the first place.

This REA was unable to find any studies that directly provide evidence of any differences or similarities between pornography and other sexualised images presented to young people. There are studies that looked at the effects of viewing pornography and studies that looked at other forms of media such as advertising, music videos and computer games, but the different forms are not compared directly with each other. Although it is tempting to make comparisons between studies that looked at these different forms of media, this raises too many methodological issues and it would be impossible to ensure scientific rigour.

What do we need to know

High priority

Throughout this question, the issue of causality has been raised. Studies find links between viewing or using violent or sexualised media and engaging in such behaviours. This makes intuitive sense

without a notion of causality; if you are interested in or enjoy a particular activity, you would focus your viewing time on it as well as engaging in it. This does not mean that watching shows about your area of interest causes the interest. Few studies have attempted to investigate causal links with regards to either sexualised media or violence. Stermer and Burkley (2012) make the point that the issue of causality remains unanswered; studies consider attitudes, not behaviours, and the connection between the two is unknown.

We know little about adolescent sexual behaviour, yet we avoid asking young people about their behaviour (Gillispie, 2006), often for good, ethical reasons. Much of the literature focuses on blaming media for sexual activity among young people; however, we have little understanding of what young people are doing, how or why. By obtaining more accurate information from young people we will gain a better understanding of this area. In turn, this will give us clarity about what roles sexualised media play in informing our young people about sex and sexual relationships and whether this differs by gender, culture, peer group, socio-economic background, family dynamics and societal norms. In recommending this, we would, of course, urge that such research adopts participative, young person-centred methods of research that conform to best ethical practice.

Low priority

Longitudinal studies (Stermer & Burkley, 2012) are imperative if we are to fully understand the long-term changes that pornography, sexualised imagery and violent imagery have on children and young people. The insufficiency of laboratory studies in understanding the complexities of long-term attitudinal and behavioural change are discussed above; this also needs to be addressed in future research.

It is unclear whether video games have an impact on young people in the same way as other forms of sexualised media (Stermer & Burkley, 2012). Some authors suggest that it is possible that the effect of interactive forms of media may be stronger because of the active part the people playing them take in the sexualised activities. The length of exposure is another possible factor increasing impact; it is not unusual for the same video game to be played repeatedly and for many hours at any one time. Another reason given for the possible greater impact of violent video games as opposed to other forms of violent media is that video games often reward players for treating women as sex objects. This needs to be investigated further to provide a definitive answer as to whether the content of sexualised or violent games is especially harmful.

Discussion and conclusions

Pornography: contested terrain

The broader context for this Rapid Evidence Assessment (REA) is one where numerous debates about pornography have occurred between people working from polarised ideological frameworks (for overviews see, for example, Attwood, 2002, 2011; Boyle 2000, 2010; Dines, 2010; Long, 2011). The dominant approaches taken to investigating the effects of pornography and the discourses used to discuss it have been criticised as being too moralistic and too anti-porn in their starting point (Lo & Wei, 2005; Mesch, 2009).

The brief for this REA was not to work from a particular perspective but to conduct a rigorous assessment of the evidence available; however, we acknowledge that it is impossible to conduct an REA, or indeed any research, from an entirely objective and neutral standpoint. Throughout this REA we have focused on reporting findings from research conducted with a high standard of methodological rigour and have allowed the findings to speak for themselves. We acknowledge that readers may take issue with the terms and definitions used (as participants in the experts workshop did); they were selected in order to provide clarity for this REA and reflect as neutrally as possible what we were considering. One of the difficulties we encountered was the lack of definitions used in the research reviewed, and we would suggest more consistency within the literature would improve the evidence base; however, we acknowledge that this may not be possible for ideological reasons. Therefore, we endorse Long's (2011, p.59) suggestion that "another means of avoiding unnecessarily circular arguments around definitions is to grant that ideas about what constitutes pornography may differ, but to be clear about what is being referred to in any given context". This should be the next step for anyone carrying out work in this area.

Many of the debates mentioned above have not focused on the effects that access and exposure to pornography could have on children and young people. However, opinion-led discussion and government-led pledges for action have increased dramatically in the last 10 years. Potential reasons for this include:

- rapid advances in availability of and access to technology (Kirkup, 2012);
- aggressive (Crabbe & Corlett, 2010, "indiscriminate and sometimes coercive" (Flood, 2007, p.49) online marketing of pornography; for example, "free" taster material, unsolicited pop-ups and emails, website names that are similar to non-sexual topics and other means to capitalise on search engine processes, "mouse trapping" (where trying to leave a website actually takes you to another), few or no age-related barriers (e.g. requesting proof of age) and lack of warnings about adult content (Crabbe & Corlett, 2010 Dombrowski et al., 2007; Flood, 2007; Independent Parliamentary Inquiry into Online Child Protection, 2012; Mitchell et al., 2003a); and
- the widespread "pornification" of society (McNair, 1996, 2002), which refers to the influence of pornography on aspects of culture (Long, 2011).

There are ongoing and heated debates from differing ideological perspectives and a limited evidence base, which may be why media coverage of children and young people's engagement with pornography, and particularly their online activities, oscillates between recognising them as full social actors and the "traditional" view of childhood and children as incomplete and incompetent agents (Ponte et al., 2009).

Table 7 brings together the key findings for the three research questions addressed in this REA.

Table 7: Summary of the REA findings for all three research questions

Question	<i>Research question 1: Identify and assess the existing evidence base on children and young people's access and exposure to pornography.</i>	<i>Research question 2: Identify and assess the existing evidence base on the effects that access and exposure to pornography have on children and young people's sexual expectations, attitudes and behaviours.</i>	<i>Research question 3: Draw upon existing literature reviews and meta-analyses on the associations between access and exposure to sexualised or violent visual imagery on children and young people, and consider whether this bears relevance to the issue in question</i>
What do we know and are confident about?	<ol style="list-style-type: none"> 1) A significant proportion of children and young people are exposed to or access pornography. 2) Exposure is more prevalent than access. 3) There are gender differences in exposure to and access of pornography. 4) Exposure and access to pornography appear to increase with age. 5) Children and young people are exposed to and access both online and offline pornography. 	<ol style="list-style-type: none"> 1) There are differences in children and young people's attitudes towards pornography according to their gender. 2) Access and exposure to pornography affect children and young people's sexual beliefs. 3) Children and young people learn from and may change their behaviour because of exposure and access to pornography. 4) Access and exposure to pornography are linked to children and young people's engagement in "risky behaviour". 	<ol style="list-style-type: none"> 1) Exposure to sexualised and violent imagery affects children and young people. 2) There is a link between violent attitudes and violent media.

Question	<i>Research question 1: Identify and assess the existing evidence base on children and young people's access and exposure to pornography.</i>	<i>Research question 2: Identify and assess the existing evidence base on the effects that access and exposure to pornography have on children and young people's sexual expectations, attitudes and behaviours.</i>	<i>Research question 3: Draw upon existing literature reviews and meta-analyses on the associations between access and exposure to sexualised or violent visual imagery on children and young people, and consider whether this bears relevance to the issue in question</i>
What do we think we know but are less confident about?	<p>6) Children and young people are exposed to and access pornography in a number of different contexts.</p> <p>7) We do not know exactly what children and young people are being exposed to or what they are accessing.</p>	<p>5) Children and young people's age is related to how they understand and process pornography and therefore how it affects them.</p> <p>6) The effects of pornography on children and young people's sexual expectations are unclear.</p> <p>7) Exposure and access to pornography appear to be related to children and young people's perpetration of and victimisation through aggressive behaviour.</p> <p>8) Exposure and access to pornography as a child or young person appear to be related to sexual offending.</p> <p>9) Exposure and access to pornography affect children and young people's perception of risk and danger.</p>	<p>3) Viewing sexualised and/or violent imagery can affect children and young people's attitudes and sexual and violent behaviour, which may in turn affect their attitudes towards relationships.</p> <p>4) Highly contentious and contradictory findings exist on the impact of violent imagery on children and young people that may confound our understanding of the effects of pornography.</p> <p>5) There is emerging but contradictory evidence about the effect of other sexualised imagery to which children and young people are exposed through film, music, advertising, mainstream and specialist media.</p>

Question	<i>Research question 1: Identify and assess the existing evidence base on children and young people's access and exposure to pornography.</i>	<i>Research question 2: Identify and assess the existing evidence base on the effects that access and exposure to pornography have on children and young people's sexual expectations, attitudes and behaviours.</i>	<i>Research question 3: Draw upon existing literature reviews and meta-analyses on the associations between access and exposure to sexualised or violent visual imagery on children and young people, and consider whether this bears relevance to the issue in question</i>
What don't we know?	<p>8) Are a child or young person's characteristics, vulnerabilities and strengths related to exposure and access (and, if they are, how and why)?</p> <p>9) Should we reduce the risk of exposure and prevent access (and, if so, how)?</p>	<p>10) We do not know what effects the cultural context has on young people's attitudes and behaviours towards and stemming from pornography.</p> <p>11) We cannot infer causality.</p> <p>12) There is much we still do not understand about young people's feelings towards and perceptions of pornography.</p> <p>13) We do not know whether pornography leads to sexual addiction and compulsivity.</p>	<p>6) We do not know what effect viewing violent images has on children and young people.</p> <p>7) We cannot draw conclusions about causality.</p> <p>8) We do not know the mechanisms through which changes occur and whether changes are long term.</p> <p>9) We do not know whether there are differences or similarities between the effects of pornography and the effects of other sexualised imagery.</p>

Question	<i>Research question 1: Identify and assess the existing evidence base on children and young people's access and exposure to pornography.</i>	<i>Research question 2: Identify and assess the existing evidence base on the effects that access and exposure to pornography have on children and young people's sexual expectations, attitudes and behaviours.</i>	<i>Research question 3: Draw upon existing literature reviews and meta-analyses on the associations between access and exposure to sexualised or violent visual imagery on children and young people, and consider whether this bears relevance to the issue in question</i>
What do we need to know? High priority	<ol style="list-style-type: none"> 1) How do young people define pornography and how do they rate explicitness? Are there different definitions according to gender, age or other demographic factors? 2) What are young people seeing when they are exposed to pornography and when they access it? 3) Are young people recording and distributing images of coerced sexual activity via mobile technology, for example in gang environments? 	<ol style="list-style-type: none"> 1) What roles do culture and socialisation play in the differences observed between studies and on young people's attitudes towards pornography? 2) What are risk and protective factors for children and young people in relation to aggressive, risky and offending behaviours? 	<ol style="list-style-type: none"> 1) Do exposure and access to violent media cause violent attitudes? 2) Why do children and young people watch sexualised or violent media?

Question	Research question 1: Identify and assess the existing evidence base on children and young people's access and exposure to pornography.	Research question 2: Identify and assess the existing evidence base on the effects that access and exposure to pornography have on children and young people's sexual expectations, attitudes and behaviours.	Research question 3: Draw upon existing literature reviews and meta-analyses on the associations between access and exposure to sexualised or violent visual imagery on children and young people, and consider whether this bears relevance to the issue in question
What do we need to know? Low priority	4) How do children and young people's socio-demographic characteristics (ethnicity, socio-economic status (SES) etc.) and experiences (within the family and the wider context) influence their online decision making and moderate or mediate any impact of online experiences? 5) Are there associations between online gaming and exposure to sexual online content?	3) What is the effect of other sexualised media, such as advertisements, on young people and children? 4) Are there links between sexualisation, objectification of young people and tabloid media?	3) Do video games affect children and young people in the same ways as other forms of violent and sexualised media? 4) Are children and young people's changes in attitudes sustained beyond initial exposure and/or access to pornography?

Methodological rigour

The process undertaken for this REA highlighted that many studies were excluded or did not achieve a high score on the weight of evidence (WoE) because of methodological problems. Some of these issues are specific to certain papers and some reflective of the literature as a whole (for a discussion of the methodologies used in the study of pornography and methodological issues, see Döring, 2009 and Flood, 2009 respectively). The six most pertinent concerns are briefly outlined below.

Problems with operational definitions

Many papers are neither explicit nor specific in the definitions or criteria they apply to the participants, attitudes or behaviours they are investigating. For example, many papers talk about children or young people without providing details of what age groups they are referring to. This is particularly problematic because, for example, 5 and 15-year-olds are at very different stages of development and therefore have had different experiences and will have different abilities. Similarly, pornography is rarely defined; as Livingstone et al. (2011, p.49) suggest, it is a broad category which is challenging

to define as it includes “a wide range of material from the everyday to the illegal”. This is important not because of the debates mentioned above, but because we do not know what children and young people consider to be pornography or sexually explicit materials, so when they are asked if they use or view pornography or sexually explicit materials, we do not know what images they are thinking about when answering these questions (Chronaki, 2013). Our workshop with young people on 25 April highlighted that, while it was challenging, they were able to reach a consensus on the constituent parts of a definition of pornography:

“Anything that’s made to get you ready, to arouse you”
 “Porn is an explicit portrayal of sexual subject matter”

Workshop with young people

Although we had not told the young people in the workshop the definition of pornography we were using, the elements they highlighted closely mirror those in the Malamuth (2001) definition used for this REA. The images they described as fitting into that definition varied widely.

Consistency within the literature

Beyond individual papers, there is a lack of consistency in terminology within the literature (e.g. unwanted exposure, accidental exposure, deliberate exposure, accessing or seeking pornography), which illustrates the challenge of describing children and young people’s behaviour in such dichotomous terms. Intention or deliberation is not always clear, even for the actor (e.g. Ybarra et al., 2009), and agency is of central importance (e.g. Döring, 2009). Bale (2011, p.307) states that: “The use of the term ‘exposure’ within health and evidence-based medicine does not capture this kind of complexity and it can easily be misinterpreted.” Attwood (2011, p.14) has also criticised the “behaviourist stance” and its use of terms such as exposure and effect. This REA’s distinction between exposure and access is a conservative approach and avoids more detailed differentiation between sub-types, something that future research may want to consider. It was also adopted in order to be consistent and to reflect the terminology used in the wider literature.

Causality

Across all of the research questions, no evidence was found that provided any insight into causality. Owens et al. (2012) argue that the research needs to progress beyond correlational statistics and suggest the need to examine mediating and moderating variables. The question therefore arises as to whether it is possible to conduct research into causality; if it is, why has it not been done yet, and, if it is not, where do we go from here? If we cannot ethically and practically carry out research that will identify cause and effect, then perhaps it is time to ask different questions.

An age-old concern exacerbated by the pace of technology?

Research on methods of exposure and access is at risk of becoming outdated before it is even published due to the fast pace of developing technologies (Byron, 2008). There seemed to be differences in technology preference even in the most recent studies (e.g. the popularity of BlackBerry mobile phones was viewed differently by young samples in two UK studies published in 2012: Ringrose et al., 2012; Phippen, 2012). What seems apparent, however, is that our concerns regarding children and young people’s access to unsuitable material are not new and are not due to the advent of the internet. Boyd and Marwick (2009, p.410) maintain that “technology inflects age-old issues in new ways” and that “we see more risky behaviours not because risky acts have increased, but because the technology makes them more conspicuous” (Boyd and Marwick, 2009, p.413).

Keeping children and young people's experiences at the centre

The majority of the research included in this REA was not designed or conducted in close collaboration with children and young people, positioning them as experts in their own experiences. The workshop on 5 March with experts highlighted the concern that it is possible that much of what we think the evidence is telling us may be inaccurate because it has been designed with adults' concerns and understandings in mind. However, we found during the workshop on 25 April with young people that their experiences broadly reflected those found in the literature reviewed for this REA. Nevertheless, we strongly suggest that future research should be designed in consultation with children and young people. The young people in our workshop were passionate, engaged and highly motivated to take advantage of the opportunity to give their opinions about pornography. We also think that mechanisms should be developed and routinely used for checking findings with children and young people before conclusions are drawn.

Cultural differences

This REA has included research from around the world. Very little of that research has considered its findings in terms of cultural differences or indeed acknowledged that there may have been some (the EU Kids Online project is an exception). However, this was not a priority area for investigation for this REA so all that can be suggested at this stage is that little is known about the impact of cultural differences within or between different countries. Factors that may be relevant include how easy it was to obtain pornography traditionally and how this mirrors the uses of the internet and prevalence trends in different countries. Related to this, very few studies considered the impact that ethnicity, socio-economic status, nationality, sexual orientation and education may have on children and young people's experiences. Even though these questions cannot be answered currently, it is important that future work follows them up.

New frontiers

New frontiers for harm

"We're all victims of it"

Workshop with young people

Many researchers have suggested that pornography has become more hard core, explicitly degrading and dehumanising, with a greater focus on aggressive sexual activity (Bridges, 2010; Crabbe & Corlett, 2010; Dines, 2010; Ezzell, 2009); however, evidence to support such assertions is limited. A plausible explanation may be that the anonymity of the internet encourages experimentation and the pushing of boundaries, which create new markets in pornography (Kaufman, 2003). Furthermore, although much pornography may be similar in content due to commercial interests, online pornography is unregulated (and therefore some is potentially illegal) and may therefore be heterogeneous (Bryant, 2009). Indeed, some young people suggested that online pornography is more explicit than that available through other means (Phippen, 2012). Related to this is the recent phenomenon of young people producing sexual images of themselves and their peers; the extent and effects of this are still largely unknown. The consequences (both long and short term) of these possible changes in the production, content and distribution of pornography are unclear, but given the possibilities of harm to children and young people, as well as the potential for positive effects, investigation is needed desperately. Boyd and Marwick (2009, p.413) propose that we should redirect our attention from the content to the underlying problems – "just because technology makes an issue more noticeable does not mean that we should focus on eliminating its visibility. Instead, we should use visibility to get to the root of the problem."

“Girls will get self-conscious about their boobs and boys about their dicks”

Workshop with young people

There is much discussion in the literature about pornography affecting children and young people's body image and the idea that you have to appear in a very stylised, enhanced way to have sex (Löfgren-Mårtenson & Månsson, 2010). It has also been suggested that the choreographed and more extreme sexual practices depicted in pornography have led to children and young people engaging in “riskier” sexual behaviours (Sinković et al., 2012). This belief may be linked to the issue of lack of definition of what exactly children and young people are watching and where they are accessing it. Some internet pornography comprises real couples uploading clips of themselves having sex; in these types of clips, the bodies on display are real people and are less likely to be digitally or physically enhanced, and so many serve an educational function for some children and young people without the concerns raised about body image problems. It is difficult to determine if children and young people's issues with body image come from the effects of pornography or from wider media. The acts shown in clips of real couples may accurately represent how people have sex and so do not necessarily misrepresent real sex acts to children and young people. However, issues remain around consent and coercion in the decision to make images publicly available and the effects of normalising the creation and dissemination of such images. Much of the literature to date focuses on professionally produced pornography and therefore may not be representative of the pornography now widely available.

A lack of theoretical or explanatory models was identified in the literature. A notable exception is Livingstone and colleagues, who have attempted to bring together what we know about exposure, access and the potential effects of pornography on the internet. They have created an explanatory model of the online risks for children and young people that considers access, usage, the child or young person's role and underlying motives and the potential negative consequences (Hasebrink et al., 2009; Livingstone & Görzig, 2012). They identified four groups of young internet users with differing expertise, engagement with internet content and support needs (e.g. Livingstone et al., 2005) and have suggested hypotheses to explain exposure to pornography and any harm caused. The usage hypothesis suggests that the more children and young people use the internet (and the more able they are), the more opportunities and risks they will encounter while there, whereas the risk migration hypothesis suggests that children and young people who encounter more risk offline will also encounter more risk online (e.g. Livingstone & Görzig, 2012). Lastly, the vulnerability hypothesis suggests that, among those who encounter risks online, the more vulnerable the child the more likely that harm will result (e.g. Livingstone & Görzig, 2012). Much more research is needed to test the explanatory model. Attempts should also be made to examine “theoretical approaches to media representation, production or consumption, or to theories of the construction of sex and sexuality, or of the ways in which knowledge and truth are socially and culturally wrought” (Attwood, 2011, p.14).

New frontiers for education

“Educate children and young people”

Workshop with young people

Many questions remain about how accurate or helpful pornography is for children and young people in domains such as sexual knowledge, curiosity and inspiration. It is unclear whether it provides them with accurate, helpful information (as some studies in this REA suggest) or whether it skews their understandings (as other studies suggest). In order to fully address these questions, we must consider children and young people's abilities to critically engage with the material they are seeing. This is where education has an opportunity to play a proactive role. However, recent events suggest that this may

not be considered within a statutory framework; a recent consultation on personal, social, health and economic (PSHE) education by the Department for Education (2013) reported that many respondents felt that parents had primary responsibility for sex and relationships education (SRE) and as a result concluded that PSHE overall will remain a non-statutory subject. This decision, and the evidence upon which it was based, appears to be a missed opportunity. The major flaw in the analysis of the consultation responses appears to be the decision to weight all responses equally regardless of whether they were from one person or on behalf of an organisation with thousands of members. The decision itself has provoked "disappointed" reactions from many organisations working in the field (e.g. Accord Coalition, Brook, Relate, Sex Education Forum), as the decision not to make PSHE a statutory subject on the curriculum means that not all young people will have access to high-quality sex and relationships education and teachers will not receive extra training and support. This decision can be seen as being even more surprising in the light of the findings of this REA, which suggest not only that children and young people want more education and opportunity to discuss sex and relationships but also that many parents feel poorly equipped to help their children (Findlater, evidence given at the Independent Parliamentary Inquiry into Online Child Protection, 2012). There seems to be an opportunity and a need for education, both for adults and for young people.

Strengths and weaknesses of this Rapid Evidence Assessment

This REA is not a full systematic review and differs from a full systematic review in one important way: the scope and depth of its searches. Searching for a full systematic review can often take more than three months (more than the total time allocated to the REA), while the searches for this report took less than three weeks. The searches conducted depended almost exclusively on electronic databases and were not accompanied by the usual practice of searching key journals by hand. While a wide range of search terms were used, it was not possible to complete all the searches we intended in the time available. However, we did screen more than 40,000 references, which, given the constraints, means that we have considered a wide range of material.

The fact that studies were excluded based on their abstract alone is also a potential weakness of this REA. Usually, the full report of all potentially relevant studies would be retrieved, whereas in this case only those that met our strict inclusion criteria were retrieved. This may have led to, for example, some pornography studies with a minor focus on children and young people being excluded. Apart from the search strategy, this REA followed all the stages and adhered to the principles that one would expect of a full systematic review. While it is difficult to estimate whether a full systematic review would have found more studies, a larger piece of work would have been able to examine a greater range of outcomes and consider other issues, many of which have been highlighted in the discussion above.

Conclusions

We are confident that we know that a significant proportion of children and young people are exposed to or access pornography; this occurs both online and offline and increases with age. Exposure is more prevalent than access. There are gender differences in exposure and access to pornography. These gender differences are also found in children and young people's attitudes towards pornography. Access and exposure to pornography affect children and young people's sexual beliefs and they learn from and may change their behaviour because of exposure and access to pornography. Access and exposure to pornography are also linked to children and young people's engagement in "risky behaviour". Considering sexualised and violent imagery more broadly, we can conclude that exposure to sexualised and violent imagery affects children and young people and that there are links between violent attitudes and violent media. We are much less confident about the other findings outlined in this REA and there are many areas that we still do not know much, if anything, about. It is apparent that much more research is needed.

Recommendations

Few papers reviewed for this Rapid Evidence Assessment (REA) – whether included or excluded – even began to consider the effects of pornography on children and young people who were: an ethnicity other than the majority for the country in which the research was conducted; a sexuality other than heterosexual; transgender; or anything other than able-bodied and with full capacity (relative to their development). All recommendations are made with the caveat that diversity must be a central part of future work.

For future research

All of the research that is proposed, where applicable, should be conducted in ways that give a voice to young people and, where appropriate, should be centred around them and have participatory processes embedded. More research is needed from multidisciplinary perspectives and using a wide range of methodologies; these should include meta-analyses and systematic reviews that can provide comprehensive accounts of what the existing evidence base tells us. All research should state clearly what definition of pornography was used and why. Authors should also be advised to state clearly whether they have separately (aside from pornography) considered:

- sexualised imagery (that does not meet the definition of pornography);
- violent imagery; and
- sex acts for storyline not arousal.

In light of the evidence in this report, we recommend that:

1. research should be conducted that investigates what children and young people think pornography is and the content of what they describe as pornographic;
2. research should be conducted that investigates whether there are links between the pornography that children and young people are exposed to and/or access and their attitudes towards, aspirations about and feelings towards relationships and sex.

An extended list of research questions is provided in Appendix 17.

Recommendations to Government

In light of the evidence in this report:

1. **The Department for Education** should ensure that all schools understand the importance of, and deliver, effective relationship and sex education which must include safe use of the internet. A strong and unambiguous message to this effect should be sent to all education providers including: all state funded schools including academies; maintained schools; independent schools; faith schools; and further education colleges.
2. **The Department for Education** should ensure curriculum content on relationships and sex education covers access and exposure to pornography, and sexual practices that are relevant to young people's lives and experiences, as a means of building young people's resilience. This is sensitive, specialist work that must be undertaken by suitably qualified professionals, for example, specialist teachers, youth workers or sexual health practitioners.

3. **The Department for Education** should rename 'sex and relationships education' (SRE) to 'relationships and sex education' (RSE) to place emphasis on the importance of developing healthy, positive, respectful relationships.
4. The Government, in partnership with internet service providers, should embark on a national awareness-raising campaign, underpinned by further research, to better inform parents, professionals and the public at large about the content of pornography and young people's access of, and exposure to such content. This should include a message to parents about their responsibilities affording both children and young people greater protection and generating a wider debate about the nature of pornography in the 21st century and its potential impact.
5. Through the commitments made to better protect girls and young women from gender-based violence in the ending violence against women and girls action plan, the **Home Office** and the **Department for Education** should commission further research into the safeguarding implications of exposure and/or access to pornography on children and young people, particularly in relation to their experiences of teenage relationship abuse and peer exploitation.
6. **The Home Office** should incorporate the findings of this report into the ongoing teen abuse campaign. Future activity on this workstream should reflect young people's exposure to violent sexualised imagery within their peer groups and relationships.

Recommendation to the Youth Justice Board

7. The **Youth Justice Board** should include questions on exposure and access to pornography within the revised ASSET assessment tool, to better inform understanding of possible associations with attitudes and behaviour and improve the targeting of interventions for young people displaying violent, or sexually harmful, behaviours.

We welcome the important work being undertaken by Claire Perry MP in her role as adviser to the Prime Minister regarding the availability of internet pornography. We ask that she considers the findings of this report and its implications for the Government's work on internet controls and the sexualisation of children and young people.

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Endnotes

- 1 Also see Itzin et al., 2007; Underwood et al., 2007.
- 2 Also see Kraus & Russell, 2008; Flood, 2007; Rideout, 2001; Tydén & Rogala, 2004; Wallmyr & Welin, 2006; YouGov, 2009.
- 3 Also see Fleming et al., 2006; Johansson & Hammarén, 2007; Romito & Beltrami, 2011.
- 4 Also see Wolak et al., 2007; Ybarra & Mitchell, 2005; Ybarra et al., 2011.
- 5 Also see Shek & Ma, 2012; van den Eijnden et al., 2008; Wolak et al., 2007.
- 6 Also see YouGov, 2009.
- 7 Also see Rosen et al., 2008; Wolak et al., 2007.
- 8 Also see Hasebrink et al., 2009; Hegna et al., 2004; Livingstone et al., 2005; Lo & Wei, 2005; Mitchell et al., 2003a, 2003b; Romito & Beltrami, 2011; Sabina et al., 2008; Skau, 2007; Tsaliki, 2011; Vandoninck et al., 2010; Wolak et al., 2007; Ybarra et al., 2011.
- 9 Also see Braun-Courville & Rojas, 2009; Cowan & Campbell, 1995; Flood, 2007, 2009; Häggström-Nordin et al., 2009; Hasebrink et al., 2009; Livingstone & Bober, 2003, 2004; Livingstone et al., 2005; Löfgren-Mårtenson & Månsson, 2010; Luder et al., 2011; Mesch, 2009; Morrison et al., 2004; Peter & Valkenburg, 2006; Phippen, 2012; Romito & Beltrami, 2011; Shek & Ma, 2012; ter Bogt et al., 2010; Tsaliki, 2011; Wallmyr & Welin, 2006; Ybarra & Mitchell, 2005.
- 10 Also see Skau, 2007; ter Bogt et al., 2010; Peter & Valkenburg, 2007; Tsitsika et al., 2009; Wallmyr & Welin, 2006.
- 11 Also see Livingstone & Bober, 2004; Livingstone et al., 2005; Mitchell et al., 2003a, 2003b; Vandoninck et al., 2010; Ybarra & Mitchell, 2005.
- 12 Also see Skoog et al., 2009.
- 13 Also see Peter & Valkenburg, 2006.
- 14 Also see Romito & Beltrami, 2011; Skau, 2007; Sinković et al., 2012.
- 15 Also see Skau, 2007; Sinković et al., 2012.
- 16 Also see Livingstone & Bober, 2003, 2004, 2005; Lo & Wei, 2005; Shek & Ma, 2012; Tsaliki, 2011.
- 17 Also see Livingstone et al., 2011; Nitirat, 2007; Svedin et al., 2011; Træen et al., 2004; Tsaliki, 2011; Wallmyr & Welin, 2006; Ybarra & Mitchell, 2005; Ybarra et al., 2011.
- 18 Also see Ringrose et al., 2012; Romito & Beltrami, 2011; Silver, 2012; Tsaliki, 2011.
- 19 Also see Ybarra & Mitchell, 2005.
- 20 Also see Wallmyr & Welin, 2006.
- 21 Also see Mulley, 2013.
- 22 Also see Flander et al., 2009; Livingstone & Bober, 2004, 2005; Livingstone et al., 2005; Mitchell et al., 2003a, 2003b.
- 23 Also see Livingstone & Bober, 2004, 2005; Livingstone et al., 2005; Mitchell et al., 2003a, 2003b.
- 24 Also see Poulter, 2009; Rosen et al., 2008; Staksrud, 2009.
- 25 Also see Livingstone et al., 2011; Mulley, 2013; Wolak et al., 2007.
- 26 Also see Mitchell et al., 2003a, 2003b; Wolak et al., 2007.
- 27 Also see Wallmyr & Welin, 2006.
- 28 Also see Cowell & Smith, 2009; Romito & Beltrami, 2011; Wallmyr & Welin, 2006.
- 29 Also see Kubicek et al., 2010; Kinsman et al., 2010; Lauszus et al., 2011; Peter & Valkenburg, 2010a; Romito & Beltrami, 2011; Skau, 2007; Wallmyr & Welin, 2006.
- 30 Also see Livingstone & Bober, 2004, 2005; Nitirat, 2007; Skau, 2009; Tsaliki, 2011; Wallmyr & Welin, 2006.
- 31 Also see Livingstone et al., 2011; Phippen, 2012; Rice et al., 2012.
- 32 Also see Jensen, 2007.
- 33 Also see Häggström-Nordin et al., 2009; Hegna et al., 2004; Mulley, 2013; Romito & Beltrami, 2011; Skau, 2007; Svedin et al., 2011.
- 34 Also see Vandoninck et al., 2010.
- 35 Also see van den Eijnden et al., 2008.
- 36 Also see Häggström-Nordin et al., 2009; Livingstone & Bober, 2003; Johansson & Hammarén, 2007; Sabina et al., 2008.
- 37 Also see Häggström-Nordin et al., 2009; Hunter et al., 2009; Owens et al., 2012.
- 38 Also see Livingstone et al., 2011.
- 39 Also see Kinsman et al., 2010.
- 40 Also see Löfgren-Mårtenson & Månsson, 2010; Mattebo et al., 2012; Peter & Valkenburg, 2010a.
- 41 Also see Malamuth, 1993.
- 42 Also see NSPCC, 2011; Papadopoulos, 2010; Womack, 2007.
- 43 Also see Willoughby et al., 2012.
- 44 Also see Markey & Markey, 2010; Stermer & Burkley 2012; not an exhaustive list.



EXHIBIT 9

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Constructing Pornography Addiction's Harms in Science, News Media, and Politics

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Constructing Pornography Addiction's Harms in Science, News Media, and Politics

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Abstract

In order to describe pornography's harms in the twenty-first century, an age of unprecedented access to Internet technology, some advocates—including activists, religious leaders, politicians, and scientists—use a medical/scientific framework to claim that pornography is biologically addictive. This article examines public discourse on “pornography addiction” to extend theories of sociology of science and sociology of sexualities about scientific knowledge and the biomedicalization of sex and sexuality. Using content analysis of over 600 documents, including scientific studies, newspaper articles, and state government resolutions, we show how references to pornography as addictive emerged in the twenty-first century and grew most substantially in the last decade. We find that scientific studies largely offer inconclusive results, yet media and political discourses use biomedical scientific language to describe how pornography directly harms the physical and mental health of individual consumers, presumed to be men, and indirectly harms broader society. These include harms to heterosexual marriages and relationships, lawful society, and normal sexual desires. Thus, we find that pornography addiction serves as an illustration of how political actors and journalists are interpreters and claims-makers

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of scientific knowledge about sexuality in the public sphere. Scientific language, rooted in neurobiology, allows claims-makers to construct pornography addiction as a seemingly objective public threat that legitimizes stereotypes about binary gender and normative (hetero)sexuality.



In the same way that a junkie eventually requires more and more of a drug to get a buzz or even feel normal, regular porn consumers will end up turning to porn more often or seeking out more extreme versions—or both—to feel excited again. And once the porn habit is established, quitting can even lead to withdrawal symptoms similar to drugs. (“How Porn Affects the Brain Like a Drug,” *Fight the New Drug* website, 2017).

From our respective positions of rabbi-counselor and former *Playboy* model and actress, we have often warned about pornography’s corrosive effects [. . .]. This is a public hazard of unprecedented seriousness. (“Take the Pledge: No More Indulging in Porn,” *Wall Street Journal* Op-Ed written by Schmuley Boteach and Pamela Anderson, 2016).

[P]otential detrimental effects on pornography’s users can impact brain development and functioning, contribute to emotional and medical illnesses, shape deviant sexual arousal, and lead to difficulty in forming or maintaining intimate relationships, as well as problematic or harmful sexual behaviors and addiction. (Utah Concurrent Resolution on the Public Health Crisis, 2016).

Religious organizations and leaders, activists and advocacy groups, politicians, counseling and recovery programs, and mainstream media frequently reference addiction when describing widespread and frequent Internet pornography use (Stoops 2017; Oeming 2018; Perry 2019). For instance, 29 US states have proposed or passed resolutions declaring pornography addiction to be a “public health crisis.” Though it is not currently classified in the Diagnostic and Statistical Manual (DSM), the preeminent diagnostic tool produced by the American

Psychiatric Association, the concept emerged in the late twentieth century with roots in the sex addiction movement beginning in the 1970s as well as media and scientific coverage of “cyber addictions” starting in the 1990s (Voros 2009). Advocates of a pornography addiction frame, unlike arguments against pornography that came before (see Strub 2010; Whittier 2018), claim medical and scientific authority to legitimize pornography’s perceived harms (Clarkson and Kopaczewski 2013; Thomas 2013; Stoops 2017; Perry 2019).

This article examines what Ferree et al. (2002, 62) call “institutional and cultural access points” for actors to shape public debates and legislative activity over pornography addiction. Starting from the assumption that scientific claims are produced and influenced by a range of institutions and networks “beyond the laboratory door” (Frickel and Moore 2006, 8; see also Gauchat 2015), we examine the dissemination of such claims in peer-reviewed scientific journals, newspaper articles, and state resolutions declaring pornography a public health problem. Using qualitative and quantitative content analysis of over 600 sources, we show how these arenas of public discourse interact to construct the problem of pornography addiction. Social scientists and humanities scholars have analyzed and critiqued the science of sex addiction in general (Irvine 2005 [1990]; Reay, Attwood, and Gooder 2015) and pornography addiction specifically (Voros 2009; Attwood 2010; Paasonen 2011; Stoops 2017; Oeming 2018), but these works have both conceptual and empirical limitations. No study has systematically analyzed scientific studies of pornography addiction alongside other forms of public discourse. Our research thus disentangles scientific claims (i.e., those made by credentialed scientists in peer-reviewed scientific journals) from claims that sound scientific (i.e., those intentionally disseminated in media and political arenas).

Pornography addiction serves as an illustration of how political actors and journalists are interpreters and claims-makers of scientific knowledge. This article, therefore, contributes to sociology of science and sociology of sexualities literatures by extending theories of what pornography addiction as a framework discursively accomplishes in the social world. We find that discussions of pornography addiction perpetuate stereotypes about binary gender and (hetero) sexuality using scientific language to legitimize those stereotypes as objective and natural. We show how the cultural saliency of addiction

as a biomedical phenomenon makes pornography addiction a seemingly neutral mechanism to maintain what Gayle Rubin (1984) calls the “charmed circle” of sexuality, or socially constructed boundaries between sexual desires and relationships that are good, natural, and healthy from those that are bad, unnatural, and unhealthy. Our findings thus support others who have critiqued the science of pornography addiction for admonishing queer forms of sexuality and endorsing heteronormativity (Voros 2009; Stoops 2017; Oeming 2018). We extend these critiques to argue that media and politics are the primary drivers of distorted scientific claims that exaggerate pornography addiction’s harms.

Knowledge Production, Science, and Sexuality

Given that the contemporary United States is a “knowledge society” (Cetina 1999), individuals frequently use scientific claims to advance competing truths (Frickel and Moore 2006; Rose 2007; Evans 2018). Though the modern “age of experts” (Brint 1996) assumes that scientific authority stems from verified training and credentials, the cultural saliency of “free speech” in America means that individuals or groups outside of or on the fringe of established scientific institutions may assert and circulate scientific-sounding claims (Waidzunus 2015; Evans 2018; Scott 2019). The US anti-vaccination movement, for example, relies on scientific claims that have been widely discredited by medical authorities. Through qualitative interviews with parents who refuse to vaccinate their children according to pediatric guidelines, however, Reich (2018) finds that these parents integrate an understanding of “science” that aligns with their existing perspectives and disregard scientific knowledge that challenges it. In the words of Haraway (1999, 204), scientific discourses are “lumpy:” they “contain and enact” polysemic claims that can be used as a means to achieve various ends.

Claims-makers shape the dissemination of scientific knowledge to broader publics through the process of *framing*: intentional or unintentional curation of messages according to the motivations and values of those making claims (Epstein 1996; Benford and Snow 2000; Moore 2013; Stone 2019). In other words, science serves as a “discursive

opportunity structure” (Ferree et al. 2002) for the media, government, social movements, and other public institutions to make claims about social problems and appropriate solutions (Frickel and Moore 2006; Evans 2018). An illustrative example is the “obesity epidemic,” a modern US social problem constructed by scientific claims about the rise in the average American’s body size and associated adverse health consequences. Yet as Saguy (2013) documents, the media acts as a filter for how most individuals receive scientific information and, in doing so, often uncritically reproduces research findings as definitive even if the scientific community understands that these findings have limitations.

When it comes to sex and sexuality, there is a robust body of literature demonstrating the use of scientific and medical discourse as regulatory forces in the modern Western world (Epstein 1996; Tiefer 1996; Laqueur 2003; Vogler 2019). Foucault (1990 [1978], 58) uses the phrase *scientia sexualis* to refer to a broad scientific understanding of sexuality that has come to dominate the “procedures for telling the truth of sex.” Recent examples include scientific tests of sexual arousal that the media interprets as a tool to discover one’s true and immutable sexual orientation (Waidzunus and Epstein 2015), sports organizations that use biologically based criteria for determining gender that implicitly reinforce heterosexuality and exclude and threaten intersex and transgender people (Westbrook and Schilt 2014; Davis 2015), and government officials who use social scientific studies to justify state control of reproduction (Balasubramanian 2018). Because science and medicine discursively produce meanings surrounding sexuality, these institutions also regulate and control sex and sexuality.

Recent interventions in studies of sexuality and science add clarity to Foucault’s *scientia sexualis* on how sexed and sexual bodies are understood through medicalized and biomedicalized discourse. Medicalization, in this context, refers to the process by which sex and sexuality are framed as biologically oriented phenomena that therefore require medical “treatments” (Szasz 1991; Riska 2010). Biomedicalization is a late twentieth-century phenomenon marked by scientific understandings of health and disease that encompass broad notions of wellness and risk (Clarke et al. 2003; Rose 2007; Riska 2010). Erectile dysfunction is an example of medicalization: a modern diagnosis for male bodies who deviate from their “normal” sexual potential (to be

erect) and can be treated with pharmaceuticals' techno-scientific advancements (e.g., Viagra), thus offering a medical route to restore normal masculine sexuality (Loe 2001; Potts et al. 2004). "Sexual health" is a modern phrase that offers an example of biomedicalization, reinforcing broad notions of the social good related to procreative, adult, and marital heterosexuality (Epstein and Mamo 2017). It is reflective of what Callahan (2012, 68) calls the "tyranny of health" where health describes universal values about well-being. The turn toward biomedicalization of sexuality marks a shift in focus, as described by Hallin, Brandt, and Briggs (2013), from the individual as "patient" to the individual as "citizen" (see also Hoppe 2018). As we describe in our findings, pornography addiction is an example of biomedical discourse that implicates groups and communities beyond the "universal body" (Potts et al. 2004) of medicalized discourse.

Biomedicalization and Addiction

In the United States, the concept of addiction has been thoroughly medicalized over the course of the twentieth century. In the 1960s and 1970s, the increased social awareness that drug use was widespread among white, middleclass Americans, especially among veterans returning from the Vietnam War, prompted the US government to take interest in and support the small and marginal field of addiction science. Addiction science became mainstream as the state began supporting a therapeutic approach in addition to laws that criminalized drug use (Vrecko 2010a). Alongside a scientific industry that studies addiction using a medical or disease model, the medicalization of addiction has also fueled a profitable and expansive treatment industry (Travis 2010). The medicalized model of addiction removes blame from individuals for the cause of their addictions while maintaining pressure for individuals to successfully treat and overcome their addictions (Weinberg 2002). As such, medicalizing addiction has biomedical effects, reinforcing the neoliberal idea that self-control is desirable and healthy (Netherland 2012).

Another consequence of medicalizing addiction is that addiction as a medical condition can expand in scope to include an ever-larger number of cases (e.g., Reith 2004; Barker and Galardi 2015). Though

early US sexologists, such as William Masters and Virginia Johnson, studied what they labeled “sexual disorders,” they did not use an addiction framework (Irvine 2005 [1990]). Instead, the emphasis on sexual addictions, including addiction to pornography, stems from the addiction movements related to substance abuse (Reay, Attwood, and Gooder 2015). In the last half century, this movement has begun to identify and treat a wide range of addictions related to various behavioral pleasures, such as eating, gambling, and sex (Travis 2010; Netherland 2012). Founded in 1977 by a longtime Alcoholics Anonymous (AA) member, Sex and Love Addicts Anonymous (SLAA) was the first established sex addiction support group. In the 1990s, the addiction movement began targeting pornography addiction, which they connected to both sex and Internet addictions (Irvine 2005 [1990]; Voros 2009). Conservative Christian leaders and organizations, which have long opposed pornography on moral grounds, championed the addiction framework in late twentieth-century messages about pornography’s harms (Thomas 2013; Perry 2019; Burke and Haltom 2020). Radical feminists, who have maintained their opposition to pornography since the 1970s (Whittier 2018), remain in coalition with religious anti-pornography groups but have not taken up the language of addiction like their conservative Christian counterparts. Instead, evangelicals and feminists find common motivation on the basis of freedom from so-called sexual exploitation, language that, according to Bernstein (2018), reflects the rise of the neoliberal state and militarized humanitarian efforts.

Science legitimizes what counts as an addiction, and thus new scientific evidence must be marshaled to establish behavioral addictions. A proliferation in neuroscientific studies has sought to measure (or contest) biological predictors and effects of a wide range of potentially addictive behaviors, such as gambling, gaming, and using the Internet (Petry, Zajac, and Ginley 2018). Though sociologists of addiction do not reject the notion that genetic or neurological factors influence addictions (see Vrecko 2010b), this work does critically interrogate the context that produces and disseminates scientific claims about addiction (Netherland 2011, 2012). Addiction is widely understood in modern US society to be caused by biological factors (indeed, the National Institute on Drug Abuse describes addiction as a brain disease), but in practice, addictions are typically diagnosed using nonbiological

criteria (such as social functioning) and treated with the goal of reducing social strain and restoring social order (Keane 2002; Weinberg 2002).

Sex addiction broadly, and pornography addiction specifically, is a contested concept within scientific communities (see Kor et al. 2013; Moser 2013; Petry, Zajac, and Ginley 2018). Our research does not strive to debunk scientific studies of pornography addiction or to take a stand in debates over whether pornography addiction is real. Instead, we examine how scientific studies debate pornography addiction discourse and how this is deployed in the public sphere of media and politics. Though behavioral addictions are broad in scope and have a range of lay and clinical support, they have not mobilized political activism and advocacy in the same way as pornography addiction. There are no movements that are comparable in size or scope related to gambling, sugar, or shopping addictions. Because we know that public debates over sex reflect broader social values and stigmas (Rubin 1984), we examine what “biological addiction” language can discursively accomplish when it comes to articulating the harms of pornography within the realms of science, media, and politics. We find that this seemingly objective scientific language is used by a range of social actors to perpetuate gender and sexual stereotypes.

Data and Methods

Drawing from qualitative and quantitative content analysis, we analyze discourse in three arenas in which “pornography addiction” emerges: scientific literature, newspaper articles, and state government resolutions.¹ First, we used PubMed, a database of more than 27 million references hosted by the US National Library of Medicine, to search for scientific studies from medical and health-related fields. We found 127 peer-reviewed articles written in the English language that contained reference to pornography addiction (“pornography/porn addict,” “pornography/porn addiction,” “addicted to pornography/porn”) anywhere in the text. Our final dataset for in-depth analysis includes 103 scientific articles published between 1992 and 2017. Most scientific articles ($n = 70$ or 68 percent) come from *psycho-social studies* or those from psychology or the social sciences that rely

on methods of self-reporting via survey questionnaires (the most common method), interviews, and/or focus groups. Our sample includes 11 *neuro-physiological studies* (11 percent) that use some neurological or physiological measure, sometimes in combination with self-report through interviews or surveys, including functional magnetic resonance imaging (fMRI or MRI), eye tracking, skin conductance, and photoplethysmogram (PPG). The remaining 21 articles (20 percent) were *review studies*, which surveyed the state of the field in a particular area but did not include original research.

Our second data source is a sample of newspaper articles collected using LexisNexis, an online searchable database that includes more than 15,000 news, legal, and business sources. We first searched for any reference to “pornography addiction” or its equivalent anywhere in the text of US English language newspapers, resulting in 1,376 articles. For in-depth analysis, we limited our search to newspaper articles where “porn” or its variations (pornography, pornographic) appeared in the headline or byline. We then excluded articles that did not focus on pornography consumption, such as those focused on the pornography industry. Our final sample for in-depth analysis included 489 articles published between 2001 and 2017. We chose to include each publication from articles republished in multiple newspapers in order to capture the magnitude/impact of these articles. The newspaper sample includes articles from 29 states and Washington DC, including those with national prominence, such as *The New York Times* and the *Los Angeles Times*, as well as a range of state and local publications. Within our sample of articles, we coded the majority ($n = 329$, 67 percent) as news articles, 95 articles (20 percent) were opinion-editorial pieces (op-eds), and 65 (13 percent) were advice columns.

Our third data source includes state-level government resolutions, describing pornography as addictive. We began with an Internet search for “pornography” and phrases related to the Utah resolution (the first of its kind to be signed into law), including “public health crisis” or “public health concern.” Table 1 lists the 29 states that have proposed resolutions as of this writing. We identified 18 states that had a resolution in some stage of the legislative process before 2018 and use these resolutions for our analysis to maintain date consistency across our data sources. All resolutions use similar language that we traced to a model resolution drafted by the National Center

for Sexual Exploitation (NCOSE) in 2016 that targets Utah. The remaining resolutions' texts differ slightly and none explicitly reference Utah or NCOSE.²

To analyze the data, members of the research team (both co-authors and research assistants) first coded each scientific study, newspaper article, and state resolution based on several explanatory criteria obtained by skimming or using the “find” function to search for relevant terms. For all data sources, we used a Google Spreadsheet to classify titles, authors, publication date, location, and if the consumer(s) of pornography described were explicitly young people (references to “children,” “millennials,” “teens/teenagers,” “students”— including college/university—or “youth”), men only, women only, and men and women, or if there were no gender markers used. We also classified the “addiction conclusion” and whether an article supported or challenged an addiction framework. For newspaper articles, we also coded for “speakers:” any individual or organization referenced within an article (Ferree et al. 2002). We then examined patterns related to frequencies for these explanatory data.

For in-depth qualitative coding, at least two members of the research team analyzed each article using the qualitative data analysis software, NVivo, to ensure cross-coder reliability (Neuendorf 2002). Our goal was to examine discourse surrounding the causes and consequences of pornography addiction. We used an “in vivo” approach where we included the exact language used in the articles that described causes, consequences, or correlations (relationships that did not specify causation). We then created broad categories based on these codes, capturing common themes (Strauss 1987). The final stage of coding was to perform in-depth analysis based on these categories where we coded “line-by-line” (Strauss 1987) to capture references to these categories and the context by analyzing newspapers' and state resolutions' entire text and scientific articles' abstracts (if an article's abstract was missing or did not contain enough information related to the categories of harm, we then read the Introduction and Discussion/Conclusion sections of the articles). For some categories that few articles referenced, we were able to analyze every article. For other categories (like harm to health), we randomly sampled articles to code until we reached a saturation point, or when coding additional articles revealed no new ideas or themes (this number differed for each category).

Table 1. State Resolutions Referencing Pornography Addiction

State	Year introduced	Name of resolution	Status
Alabama	2017	Recognizing pornography as a public health crisis in Alabama	Died in Committee
Alaska	2019	A resolution recognizing the public health crisis created by the accessibility and pervasiveness of pornography; and recognizing the need for education, prevention, research, and changed in public policy to address the harms caused by the accessibility and pervasiveness of pornography in communities in the state	Referred to Committee
Arizona	2019	A concurrent resolution denouncing pornography as a public health crisis	Passed in House and Senate
Arkansas	2017	Recognizing and finding that the proliferation and accessibility of pornography has created a public health crisis	Passed in House
Florida	2017	Public health risk created by pornography	Passed in House
Georgia	2017	Pornography; creating a public health crisis; recognize need for education	Died in House
Hawaii	2017	Recognizing the public health crisis in regards to pornography	Died in Committee
Idaho	2019	A concurrent resolution of the legislature recognizing that pornography is a public health hazard leading to a broad spectrum of individual and public health impacts and encouraging all state and local government agencies to ensure that pornographic materials are not accessible from their internet connections	Passed in House and Senate
Iowa	2019	A concurrent resolution recognizing the public health hazard of pornography and its harmful proliferation on the internet and calling for vigorous enforcement of obscenity laws and steps to address the crisis of easily accessible pornography on the internet	In process in the House
Kansas	2017	A resolution recognizing that pornography is a public health hazard that leads to a broad spectrum of individual and public health impacts and societal harms	Passed in House and Senate
Kentucky	2018	A resolution declaring pornography to be a public health crisis, encouraging education on the dangers of pornography, and requesting the increased enforcement of current laws to curb the objectification and exploitation of women and children	Passed in Senate
Louisiana	2017	A concurrent resolution to recognize and acknowledge the proliferation of pornography among Louisiana children to be a public health hazard which leads to a broad spectrum of individual and societal harms and denounce pornography as a corroding influence on childhood in our state	Passed in House and Senate
Maryland	2019	Exposure to pornography—Public health crisis	Died in Committee
Minnesota	2017	A resolution recognizing pornography as a public health hazard leading to a broad spectrum of individual and public health impacts and societal harms and memorializing Congress to recognize this hazard and address pornography at a national level	Died in Committee
Mississippi	2018	A concurrent resolution declaring the legislative policy that pornography is a public health hazard and recognizing the need for education, prevention, and research	Died in Committee
Missouri	2017a	Recognizes the societal harms brought by pornography and the need for education, prevention, research, and policy change	Passed in House

Continued

Table 1. State Resolutions Referencing Pornography Addiction (*continued*)

State	Year introduced	Name of resolution	Status
Montana	2019	A resolution of the House of Representatives of the State of Montana expressing the sentiment that pornography is a public health hazard that must be addressed through education, prevention, research, and policy change at the community and societal level	Passed in House and Senate
New Mexico	2018	Pornography as public health hazard	Died in Senate
Ohio	2019	To declare that pornography is a public health hazard with statewide and national public health impacts leading to a broad spectrum of individual and societal harms	Introduced in House
Oklahoma	2017	A concurrent resolution related to the effects of pornography; making legislative findings; declaring the public health impacts and societal harms of pornography; recognizing the need for education, prevention and change in policies to address pornography; declaring need for regulation; and directing distribution	Passed in House
Pennsylvania	2017	A resolution recognizing pornography as a public health hazard leading to a broad spectrum of individual and public health impacts and societal harms	Passed in House and Senate
South Carolina	2017	To recognize and acknowledge the public health hazard of pornography which leads to a broad spectrum of individual and societal harms; to express the need to address the pornography epidemic by encouraging education, prevention, research, and policy changes to address the proliferation of pornography on the internet in particular, and to call for regulation of pornography on the internet to ensure compliance with obscenity laws of the state	Referred to Committee
South Dakota	2017	Recognizing and finding that pornography is a public health crisis leading to a broad spectrum of individual and public health impacts and societal harms	Passed in House and Senate
Tennessee	2017	A resolution to recognize pornography as a public health hazard leading to a broad spectrum of individual and public health impacts and societal harms	Passed in House and Senate
Texas	2017a	Recognizing that pornography is a public health hazard	Referred to Committee
Utah	2016	Concurrent resolution on the public health crisis	Passed in House and Senate
Virginia	2017	Recognizing pornography as a public health hazard leading to a broad spectrum of individual and public health impacts and societal harms	Passed in House
West Virginia	2017	Declaring pornography to be a public health crisis leading to a broad spectrum of individual and public health impacts and societal harms	Died in Committee
Wyoming	2018	Pornography as a public health crisis	Died in House

a. Resolutions were first introduced in 2017 but failed to advance in the legislature. Bills were reintroduced in the 2019 session and passed the Senate in the case of Missouri and are still active in the legislative process in the case of Texas.

One limitation of our methods (and opportunity for future research) is that we do not examine context for our data. For instance, we do not include the number of times a scientific article has been cited or the impact factor of the journal article. We do not compare scientific studies that reference “pornography addiction” with those that study pornography consumption without referencing this framework. We do not consider varying readership of newspapers (e.g., Utah newspapers publish a large number of articles mentioning pornography addiction but have a limited readership compared to New York newspapers, which publish fewer articles on the topic). We do not discuss the political context of the states that consider pornography-related resolutions. Instead, the goal of our study is to examine these different data sources to understand how public discourses engage the concept “pornography addiction” to assess how this phrase conveys cultural meaning.

Pornography Addiction Discourse in Science, Media, and Politics

Figure 1 shows the number of scientific and news articles published each year until 2017, illustrating the rise of pornography addiction as a medicalized concern. Virtually absent before 2000, media and scientific attention to pornography addiction increased substantially in the past decade. Before 2010, 366 newspaper articles reference pornography addiction. Since then, there have been 1,010 published newspaper articles. For scientific articles, 27 articles were published before 2010, and 101 articles published since. State resolutions (see table 1) emerged in 2016 with one state’s passage (Utah) and had a marked increase in a single year. In 2017, 17 states introduced these resolutions.

Most newspaper and scientific articles and state resolutions that mention “pornography addiction” implicitly or explicitly endorse it. As shown in figure 2, all state resolutions support an addiction framework for pornography along with the majority of newspaper articles (91 percent) and scientific articles (72 percent). We coded “support” for pornography addiction among those texts that use the phrase “pornography addiction” uncritically, taking for granted that pornography can be addictive. We coded “challenge” to pornography addiction among those texts that questioned evidence of pornography’s addictive

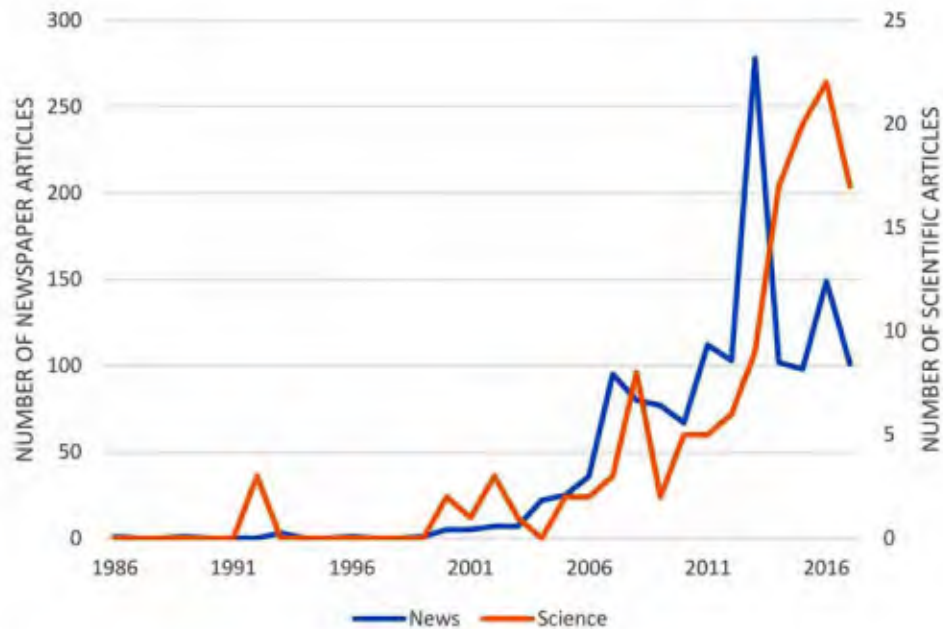


Figure 1. Number of scientific and newspaper articles reporting on pornography addiction.

nature. For newspaper accounts, this often came in the form of journalists, who quoted or referenced “both sides” of the addiction debate, or op-eds that explicitly critiqued a pornography addiction framework. For scientific studies, most articles used language that did not definitively dismiss pornography as addictive but instead argued that existing research is too limited to support pornography as addictive, almost always making comparisons to other well-researched addictions such as cocaine, alcohol, and gambling.

Compared to newspaper articles and state resolutions, scientific articles were the least likely to support an addiction framework, and we found less support among neuro-physiological research than psycho-social studies. Seventy-six percent of psycho-social articles that referenced pornography addiction supported an addiction framework, compared to 55 percent of neuro-physiological articles. Psycho-social articles outnumbered neuro-physiological articles by nearly seven to one and were better positioned to support an addiction framework by using self-reports of perceived addiction or addiction-like behavior. Neurophysiological articles that did not include self-reported measures used criteria to define and measure addiction neuro-physiologically,

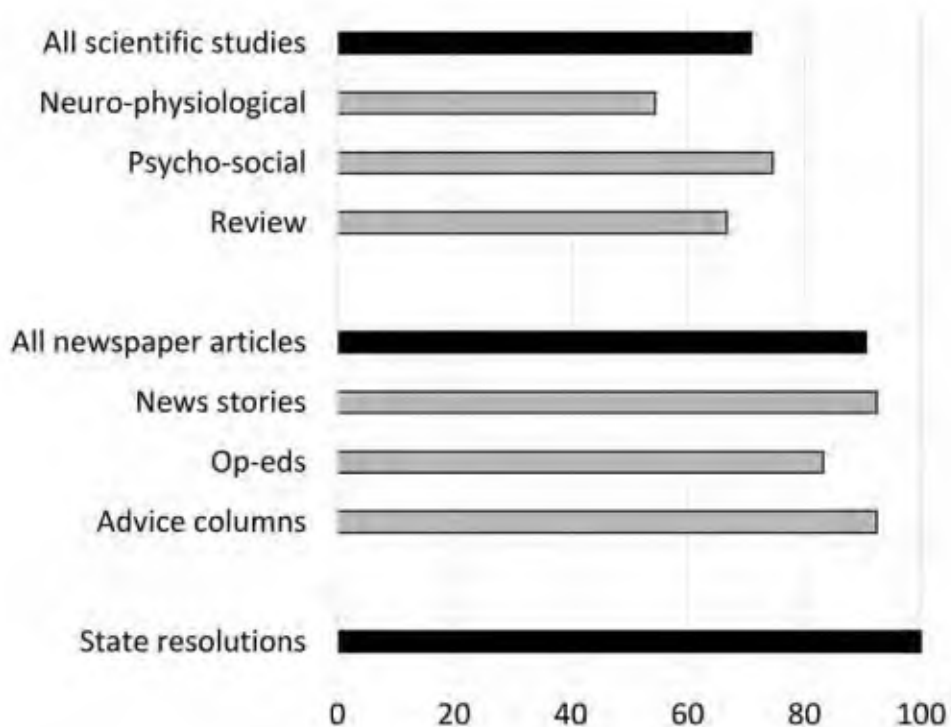


Figure 2. Percentage of scientific studies, newspaper articles, and state resolutions that support a pornography addiction framework.

and these noted common limitations. First, for those using cross-sectional designs, researchers could not determine whether the differences they observed preceded or followed pornography consumption. Second, as an article published in 2015 in *Frontiers in Human Neuroscience* describes, neurological researchers who work under the assumption that the brain responds to cue and reward differently when studying addiction (i.e., what triggers the addictive behavior and to what effect) test pornography itself as a reward behavior rather than as a cue for future reward. In other words, in the lab, participants are typically instructed that they should not masturbate while being exposed to visual sexual stimuli or pornographic material. These studies may lack construct validity measuring pornography as a reward, whereas in real-life pornography, it is most often a “cue” for some other rewards (i.e., masturbation or partnered sex).

All state resolutions support the addiction framework and make neurophysiological claims about pornography’s harms (e.g., references to the brain, biology, or neurological evidence). Most states use broad

descriptions of scientific conclusions instead of specific references to scientific research.³ For instance, state resolutions from Oklahoma and South Carolina include the phrase: “recent neurological research indicates that pornography is potentially biologically addictive.” All resolutions reference the brain and that pornography is addictive. All but two resolutions use the phrase “biologically addictive.”

In comparison, 36 percent of newspaper articles ($n = 175$) that reference pornography addiction mention specific neuro-physiological evidence. These claims do not necessarily come from scientific experts. Instead, we find that newspaper articles draw from a variety of professionals who are not scientists to comment on pornography addiction. For example, one newspaper article published in *The Hartford Courant* (Connecticut) quotes two therapists who work with men suffering from compulsive sexual behavior. One explains that “the brain scans of sex addicts exposed to the stimuli such as pornography mirrored the brain scans of cocaine addicts when shown a line of cocaine.” As indicated in table 2, there are no neuroscientists among the “speakers” most frequently mentioned in newspaper articles; instead it is a combination of politicians, authors, therapists, leaders of non-profit organizations, and social science researchers, many of whom were quoted making neuro-physiological claims. The two speakers mentioned in the most articles in our sample, Craig Gross and Michael Leahy, are both self-identified Christians who have founded organizations focused on helping fellow Christians avoid pornography. Both news media and state resolutions draw from sources of authority beyond the scientific community (and specifically the neuroscientific community) to comment on the addictive nature of pornography while still emphasizing the neuro-physiological foundation of pornography addiction.

Constructing Pornography Addiction’s Harms

Most newspaper and scientific articles and state resolutions that mention “pornography addiction” implicitly or explicitly support it and therefore also support the notion that pornography can cause harm. Our findings identified four broad categories of harm, which are listed in table 3. The first of these, harm to the consumer, is the mostly

Table 2. Names and Positions of Most Frequently Mentioned Speakers in Newspaper Articles

<i>Name</i>	<i>Position</i>	<i>Number of articles</i>
Craig Gross	Christian activist and author	52
Michael Leahy	Christian activist and author	50
Clay Olsen	Activist and nonprofit director	28
Gary Herbert	Politician	21
Jill C. Manning	Sex therapist and author	18
Pamela Atkinson	Activist and nonprofit director	18
Mary Anne Layden	Professor of psychopathology	18
Todd Weiler	Politician	17
Gail Dines	Activist and professor of sociology	11
Robert Weiss	Sex addiction therapist	8

closely associated with the medical effects of biological addiction. This harm centers around the individual health consequences that stem from pornography addiction and is deployed relatively evenly across scientific, media, and political sources. The other three harms— harms to man-woman relationships, harms to lawful behavior, and harm to normal sexual desires—illustrate the extent to which pornography addiction is a biomedical phenomenon. These are disproportionately deployed within the contexts of media and politics and expand beyond

Table 3. Categories of Harm and Percentage of Scientific Studies, Newspaper Articles, or State Resolutions Evoking Them

<i>Harm to . . .</i>	<i>Examples</i>	<i>Scientific studies (%)</i>	<i>Newspaper articles (%)</i>	<i>State resolutions (%)</i>
Consumer	Low self-esteem; depression and anxiety; damaged brain development; sexually transmitted infections	74	94	100
Men's relationships with women	Thwarted friendships or romances; marital conflict; delayed marriage; extramarital affairs; objectification or mistreatment of women	20	60	100
Lawful behavior	Violence and aggression; robbery; sex trafficking; sex work	1	13	94
Normal desires	Shocking, extreme, or deviant sexual interests including group, same-sex, hardcore, or kinky sex; misinformation about real-life sex	2	13	94

the physical or emotional consequences of addiction that affect the individual consumer and instead evoke broader ideas about the social good. We categorize these as indirect harms to society. The ways in which scientific studies, newspaper articles, and state resolutions articulate the harms of pornography contribute to its moral and political charge, casting judgment not only on pornography consumption itself as an addictive behavior but also broader ideas related to binary gender and heteronormative forms of sexuality.

Harm to the Consumer

Who are the consumers?

Although we found repeated reference across all three datasets to what some sources describe as the “triple A threat” of pornography in the twenty-first century— it is *affordable* (through free streaming online sites), *accessible* (through widespread Internet access, including smart phones), and *anonymous* (through private virtual consumption)—most sources position young men as the most likely group to experience the health-related harms of pornography addiction. Some state resolutions describe those who consume pornography in generic terms, for example, using the phrase “the pornography user.” News articles often used gender-neutral language to reflect a neutral journalistic style. Op-eds more frequently used the first or second person (“I” or “we” or “you”), like the one published in *The New York Times*, which states “we’re exposed to pornography” and references “people” who look at porn. Yet, figures 3 and 4 show how our data disproportionately describe men and youth as the users (and potential addicts) of pornography, situating this group (i.e., young men) to be the presumed consumers of porn and most likely to be affected by pornography addiction’s harms.

Figure 3 shows that 45 percent of newspaper articles (220 of 489) describe only men as the consumers of pornography, compared to 40.3 percent (196 articles) that do not include gender markers; 13.3 percent (64 articles) that mention both men and women explicitly; and 1.2 percent (4 articles) that mention only women. For state resolutions, the same number describes men as the exclusive consumers of pornography as those that do not include gender markers (7 resolutions, or 38.9 percent). Twenty-two percent of state resolutions (4 of

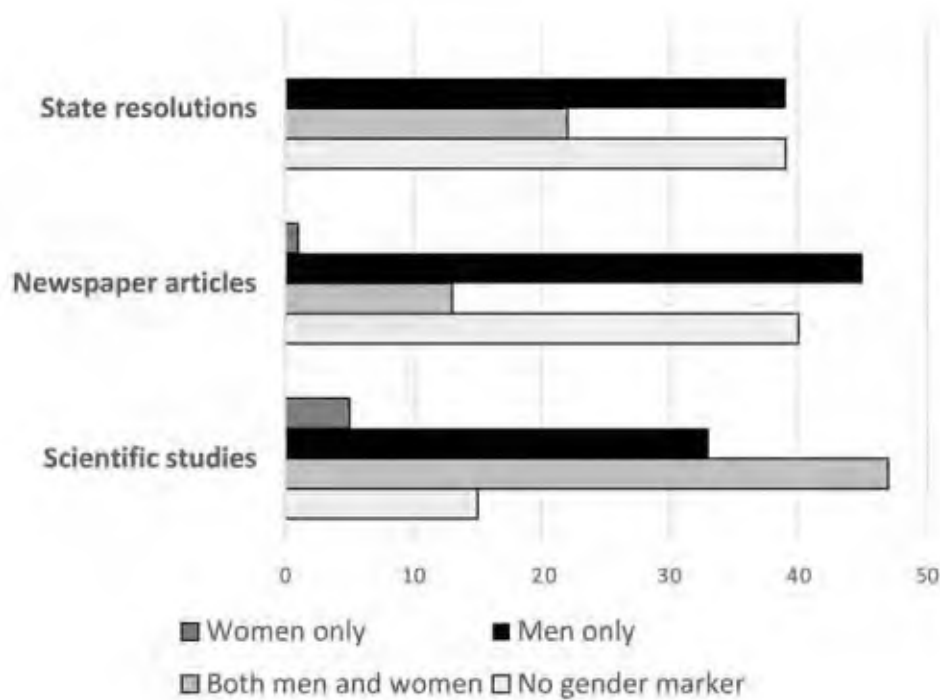


Figure 3. Gender of pornography consumer referenced by percentage of state resolutions, newspaper articles, and scientific studies.

18) describe pornography users as both men and women, and none focus exclusively on women as pornography consumers. Newspaper article titles that illuminate the gender of pornography consumers include “Husband’s porn habit frustrates wife” (*Spokesman Review*, Washington), “Anna Duggar shares pain from Josh Duggar’s cheating, porn addiction” (*The East Bay Times*, California), and “Dear Abby: Despite promise to stop, man resumes watching pornography” (*St. Paul*



Figure 4. Percentage of state resolutions, newspaper articles, and scientific studies that explicitly reference youth as consumers of pornography.

Pioneer Press, Minnesota). Though some newspaper articles diverge from this pattern, like one op-ed titled, “Pornography and Sex Addiction: Not Just a Man’s Problem” (*Deseret News*, Utah), most reinforce an assumed relationship between men and pornography addiction.

As shown in figure 4, both newspaper articles and state resolutions emphasize that young people are most at risk of becoming addicted to pornography. Nearly half of the newspaper articles in our sample (46 percent or 225 articles) explicitly mention this group, which we coded as any reference to “children,” “youth,” “teens,” “adolescents,” or “students,” as the likely consumers of pornography. Newspaper titles dramatize the risk of pornography to youth: “Ask Amy: Family wrestles with how to cope with teen’s addiction” (*The Washington Post*, Washington, DC), “Pornography’s young victims” (*Deseret News*, Utah), and “Internet feeds kids’ porn diet” (*Orange County Register*, California). In the op-ed quoted in our introduction, Rabbi Shmuley Boteach and former Playboy model Pamela Anderson describe today’s generation of children as the “crack babies of porn” (*The Wall Street Journal*, Washington, DC). Louisiana’s state resolution, mentioning the “proliferation of pornography among Louisiana children,” offers a unique emphasis on the protection of youth, but all state resolutions describe pornography as leading to “an increase in problematic sexual activity at younger ages” and describe pornography as “contributing to the hyper-sexualization of teens, and even prepubescent children.” Over half of the resolutions also include the phrase that pornography “teaches girls that they are to be used and teaches boys to be users” ($n = 12$).

The overall sample of scientific articles tends to include adult samples of men and women (47 percent) and therefore counter trends observed in newspaper and state resolution data. About one in four scientific studies (26.2 percent) referenced young people in the abstract, most often studies that sampled college or university students. Findings from these studies may contribute to the commonly assumed belief in news and politics that young people are particularly likely to become addicted to pornography. Within our sample of neuro-physiological studies, 81.8 percent (9 of 11) included all-male samples. Though psycho-social studies that analyze gender do find differences in pornography consumption and perceived addiction for men and women, neuro-physiological studies that use all-male samples

reinforce the assumption that men experience unique physiological harm as a result of pornography consumption. Neurophysiological articles are more similar than psycho-social articles to newspaper articles and state resolutions in the likelihood of exclusively emphasizing men as the consumers of pornography. This serves to reinforce a medicalized model of men's biological predisposition to become addicted to pornography and thus perpetuates the stereotype that men have innate and uncontrollable sexual urges. Women, who may be literally excluded from a neuro-physiological study's sample, are then figuratively understood to lack these same sexual desires.

How are consumer's harmed?

As table 3 shows, the most frequently cited harm in scientific research, newspaper articles, and state resolutions was what we categorize as health-related harm to consumers. We coded this harm broadly to encompass any and all consequences related to the emotional, physical, spiritual, or social well-being of individuals (we adapted this from the World Health Organization definition of health). The articles in our sample that implicitly or explicitly support an addiction framework often assume a priori pornography's direct harm to consumers since addiction in and of itself is understood as a medicalized consequence to addicted individuals (Netherland 2012). Within our sample, 74 percent of scientific articles, 94 percent of newspaper articles, and 100 percent of state resolutions described harm to health as a consequence of pornography addiction.

Across datasets, many articles in our sample drew directly from language used to describe substance and other behavioral addictions (most often gambling). Some scientific studies, for example, used addiction language of "cravings," "attentional biases," and "preoccupancy" (*Addiction*; *Behavioral Science*; *Journal of Psychiatric Research*; *PLOS ONE*; *Sexual and Reproductive Health*). In one article in *Behavior Science* reviewing neuroscientific research on pornography addiction, the authors describe pornography use like the addictive cycle of drugs: "(1) binge/intoxication; (2) withdrawal/negative affect; and (3) preoccupation/ anticipation." Some newspaper articles quoted activists and politicians who used an analogy to smoking tobacco to describe pornography's harm to physical health. In one article in the *Deseret News* (Utah), Senator Todd Weiler who authored Utah's state

resolution says, “Before you pick up a cigarette today, you know that you may be acquiring an addiction. [...] I would like people to know that with porn before they approach it.”

In addition to the claims made by a broad range of “experts,” newspaper stories often contained personal accounts or anecdotes about the direct harms of pornography addiction. An article in *The New York Times* profiled Alexander Rhodes, the founder of the popular website NoFap.com, that helps individuals strategize about taking breaks from masturbation and pornography. Rhodes is quoted repeatedly reflecting that he was “addicted to internet porn” and shares the personal consequences of this addiction: he used pornography to cope with emotional problems rather than confronting their source and experienced “porn-induced erectile dysfunction” where he could not maintain an erection unless he watched pornography.

Even for neuro-physiological scientific articles, most negative health consequences were based on self-reports, such as survey or interview data. One *PLOS ONE* neuro-physiological study measures “neural correlates” of pornography consumption using fMRI and an experimental design but goes on to describe negative outcomes of compulsive pornography consumption based on male participants’ self-reports:

[T]hey had lost jobs due to use at work ($N = 2$), damaged intimate relationships or negatively influenced other social activities ($N = 16$), experienced diminished libido or erectile function specifically in physical relationships with women (although not in relationship to the sexually explicit material) ($N = 11$), used escorts excessively ($N = 3$), experienced suicidal ideation ($N = 2$) and using large amounts of money ($N = 3$; from £7,000 to £15,000). Ten subjects either had or were in counselling for their behaviours.

Other examples of negative emotional consequences presented in scientific studies include psychological distress, narcissism, depression and anxiety, sexual dissatisfaction, loneliness, body image dissatisfaction, and negative self-perception and self-esteem. Surveys or interviews, rather than neurophysiological measures, are typically used to assess these harms to individual consumers of pornography.

All state resolutions refer to the potential negative health consequences of pornography use, and all but one state (Florida) mention emotional illness. Twelve state resolutions use the phrase that pornography can “contribute to emotional and medical illnesses.” Many resolutions refer to specific consequences, such as Georgia’s, which describes pornography use “leading to low self-esteem and eating disorders.” State resolutions take a clear biomedical approach indicating that pornography addiction is a problem for citizen health and well-being and is thus a “public health” concern. As evidence, a total of 13 states include language to suggest that pornography is more than an individual problem. Six states use the phrase, “overcoming pornography’s harms is beyond the capability of the afflicted individual to address alone.” Framing pornography use in this way removes blame from the individual consumer by situating the risks of pornography as physical and biological rather than a result of poor judgment. The language of resolutions also indicates that their purpose is to raise public awareness as all of the 18 resolutions recognize the need for “education, prevention, research, and policy change.”

Harm to Men’s Relationships with Women

Many sources position women as impacted by pornography addiction but as collateral damage rather than direct consumers. Our coding revealed that the relationships targeted as harmed by pornography consumption were specifically man-woman relationships, typically, but not always, that were romantic in nature. These sources perpetuated a binary understanding of gender that assumed heterosexual pairing of men with women. Harm to man-woman relationships was the second most common harm described by articles in our sample. Twenty percent of scientific articles ($n = 21$) discuss the correlation between pornography consumption and harm to men’s relationships with women, most often focused on quality of marital relationships. According to one *Archives of Sexual Behavior* study’s conclusions, “sexually explicit material enhances perceptions of relationship alternatives which, in turn, increase the likelihood of intimate extradyadic behavior.” In other words, viewing pornography increases the likelihood of cheating on a partner. One finding in scientific research is an uneven effect of pornography consumption on men compared

to women, where negative effects are typically associated with men, while women experience neutral or positive effects on their relationships when they consume pornography. Findings like these are an example of how scientific research is more nuanced and inconclusive when it comes to pornography's harms than are newspaper articles and state resolutions.

Sixty percent of newspaper articles evoked harm to men's relationships with women. Within news media, advice columns consistently supported an addiction frame and most often focused on negative relationship consequences. One reader writes to advice columnists Jann Blackstone-Ford and Sharyl Jupe of *The Augusta Chronicle* (Georgia) explaining that her marriage ended due to her husband's "infidelity and addiction to porn." The columnist responds by affirming the nature of addictive behavior in relation to pornography: "An addiction to porn and infidelity sometimes go hand in hand. Don't blame yourself. A therapist familiar with porn addiction can help you move on." In another advice column, a reader writes to "Dear Annie" explaining that his wife recently found out about his porn use and claimed it was the same as an extramarital affair. The reader asks Annie if his wife's reaction to his porn use was reasonable. Annie responds that looking at pornography is a betrayal of trust and that cybersex is "a form of cheating." The columnist concludes, "If you cannot stay away from it, consider that you may have an addiction that requires treatment."

All state resolutions imply harms to man-woman relationships, but there is variation. Alabama's resolution does not mention the impact of pornography consumption on marriages or families but does include the claim that pornography "teaches girls to be used and teaches boys to use." Other resolutions (12 of 18 states) make claims that widespread pornography use contributes to the declining marriage rate; most of these (11 of 12) specify that pornography lessens the "desire in young men to marry." Thirteen of eighteen states claim that pornography has "a detrimental effect on the family unit." Emphasizing this harm to the family helps to establish the case that the harms of pornography go beyond the individual and threaten broader social norms. Framing these harms as a threat to the family, and by extension public health, situates pornography use within the purview of the state, facilitating increased regulation of both gender and sexuality.

In addition to harm to relationships, this category also includes “harm to women,” which we coded in vivo along with references to harm to women’s bodies or harm to attitudes about women. Though the vast majority of state resolutions evoked harm to women explicitly in addition to harm to men’s *relationships with* women, most newspaper and scientific articles did not reference women outside the context of their relationship with men (articles that discuss harm to women but do not mention addiction to pornography are beyond the scope of our study). Among scientific articles, we coded only three articles that discussed pornography’s harm to women outside of relationships to men, two of which offered inconclusive results. Similarly, only 41 of 489 newspaper articles referenced direct harm to women beyond heterosexual relationships. For example, feminist sociologist and anti-pornography activist, Gail Dines, referenced in 11 articles in our sample, stresses the specific harm to women that pornography causes. One article published in *The Heights* (Massachusetts) quotes Dines saying that pornography is not “making love” but instead “making hate,” referring to hatred toward women. A majority of state resolutions (11 of 18) describe pornography as “treat[ing] women and children as objects and commodities for the viewers’ use,” presenting women as vulnerable and innocent as children. Additionally, the resolution from West Virginia describes pornography use “by either partner” as “linked to an increased likelihood that girls will engage in group intercourse.” Though harm to women dominated feminist debates over pornography in the 1980s (Duggan and Hunter 2006; Whittier 2018), this category of harm was less prominent across news, science, and political outlets in our sample. The rise of pornography addiction, therefore, appears to mark a move away from (though not entire dismissal of) broad feminist-sounding discourse and instead emphasizes biomedical language of women’s well-being in the context of interpersonal and romantic relationships with men.

Harm to Lawful Behavior

Nearly all state resolutions in our sample allude to or explicitly claim that pornography addiction fuels criminal behavior, typically acts of violence or the illegal sex industry, that is, sex work or sex trafficking (see also Bernstein 2018). Harm to lawful behavior was less likely to

appear in newspaper articles (only 13 percent evoke this harm) and was extremely rare within scientific studies. The single scientific study in our sample that supports the idea that pornography consumption fuels criminal or violent behavior found a positive relationship between pornography use and sexual aggression and victimization (*Journal of Sex Research*). Like the category “harm to women,” many scientific studies and newspaper articles that question the relationship between pornography and violence do not use the phrase “pornography addiction” and therefore fall beyond the scope of our analysis.

Though infrequent, newspaper articles that do evoke this category of harm are likely to detail outrageous and sensational accounts of pornography addiction motivating a crime. An article published in *The Bismarck Tribune* (North Dakota) features a case of a woman who told investigators that she broke into a neighbor’s home multiple times “looking for items she could sell to feed her porn addiction.” In another example, a newspaper article published in *The Oklahoman* (Oklahoma) in 2011 presents the case of a man who confessed to stabbing his wife to death after she confronted him about viewing pornography. The perpetrator told police that he loved his wife but is a “sick individual” who is “addicted to pornography.” Though they comprise a very small number in our sample, these articles portray pornography as a serious and transformative addiction, mirroring perhaps dramatic accounts of transformations that take place when unsuspecting “normal” people become addicted to drugs, such as opioids or methamphetamine.

All state resolutions except Texas’ mention violence as a consequence of pornography addiction. The Louisiana resolution includes the claim that the age of first exposure to violent pornography correlates with the likelihood of committing acts of violence: “the younger a boy is exposed to images depicting rape, bondage, abuse of women, and other deviant behaviors, the more he is prone to commit violence and force nonconsensual sex with others.” Sixteen of eighteen state resolutions mention that pornography “increases the demand for sex trafficking,” and all but one resolution describe increased demand for prostitution as a consequence. All but two states mention some unlawful activities associated with child sexual abuse or child pornography. For instance, the Kansas resolution states that pornography “increases child sexual abuse and child pornography and the demand for

sex trafficking and prostitution.” Such resolutions suggest that it is the faceless pornography industry, not men, who should be held responsible for sex trafficking and other forms of exploitation.

Harm to Normal Desires

The final harm evoked by most state resolutions and some newspaper articles and scientific studies is that pornography addiction harms the development of socially agreed upon standards of “normal” sexual desires. This is reflective of what Rubin (1984) calls the “charmed circle of sexuality,” wherein social boundaries between good and bad kinds of sex associate deviant sexual behaviors— like pornography—with other deviant acts. Scientific studies were the least likely type of article to discuss this category. One 2017 example from *Sexual and Reproductive Healthcare* finds that frequent pornography use was associated with the use of “hardcore” pornography. That the researchers pointed this out suggests that “hardcore” pornography deviates in some significant way from other kinds of pornography (unmarked in this article/i.e., no distinction made with softcore pornography). The only other scientific article to discuss this harm (published in the *Journal of Sex Research*) finds that men with antisocial personality disorders are more likely to find “extreme or intense” pornography arousing, connecting deviant porn with deviant individuals.

Thirteen percent of newspaper articles also articulated this harm. In one “Dear Abby” column, the writer asks Abby to weigh in on her boyfriend’s “Internet porn addiction.” The columnist responds, “You should urge Kyle to get help for his addiction. [. . .] Although you don’t want to lose him, becoming more involved could lead to his wanting to try out his sexual fantasies with you. If you go along with it, it will land you in a world of trouble. The smart thing to do is end this relationship now.” The writer does not disclose that her boyfriend is interested in any pornography depicting sex with which she would not approve, but the advice columnist generalizes about pornography addiction in the context of relationships noting that it causes sexual fantasies that are “a world of trouble.” A newspaper article published in the *Star Tribune of Minneapolis* (Minnesota) describes the findings from a recent report published by the Witherspoon Institute. The article explains that “Like alcoholics, porn addicts need increasingly

novel or bizarre sexual images, over time, to reach the same level of arousal.” The article’s language that pairs “novel” with “bizarre” suggests that in order to find new porn to consume, one will inevitably venture into deviant territory.

Unlike scientific studies and newspaper articles, most state resolutions (14 of 18) include the phrase that pornography use “shapes deviant sexual arousal.” Oklahoma and South Carolina include this claim: “recent neurological research indicates that pornography is potentially biologically addictive, which means the user requires more novelty, often in the form of more shocking material, in order to be satisfied.” Hawaii’s resolution refers to pornography depicting “extreme degradation and violence” that consumers desire as a consequence of their biological addiction. Louisiana’s resolution describes how “young boys” may be “exposed to images depicting rape, bondage, abuse of women, and other deviant behaviors.” These allusions to “deviant,” “shocking,” and “extreme” forms of sexual desire that develop *from* pornography use assume that pornography taints normal, expected, and demure forms of desire. This language also gives the impression that “normal” men would not *choose* or intentionally seek “deviant” depictions of sex, were it not for their addiction. Political actors define “deviant” sex when attaching it to pornography as a public health threat.

Conclusion

As an industry that produces images of and ideas about sex, pornography and the debates that surround it have always reflected deeper and broader social and political conflict (Duggan and Hunter 2006; Strub 2010; Whittier 2018; Jones 2020). In contemporary American society, *addiction* is the dominant frame by which we understand most compulsive behaviors and excessive pleasures, from social media to sugar (Netherland 2012). And as systems of power often rely on biomedicalized discourse to regulate sexual bodies (Epstein 1996; Haraway 1999; Vogler 2019), it is not surprising that addiction has come to explain pornography and its supposed harms. By analyzing pornography addiction discourse in scientific studies, news articles, and state government resolutions, we find that actors in nonscientific arenas deploy

scientific-sounding claims in order to make judgments about sexual behavior more convincing even if such claims are not well established in the scientific community. Thus, a wide range of social and political actors claim to be scientific truth-tellers of sexuality and gender. Pornography addiction not only serves as a discourse to shape public perception of sexual desires, behaviors, and relationships that are healthy or unhealthy or good or bad but also allows political actors to use this discourse to legislate what is considered healthy or natural sexuality (Epstein and Mamo 2017). We find that the harms attributed to this addiction reify gender as binary and normative assumptions about (hetero)sexuality.

Our findings reveal that references to pornography as addictive emerged in scientific articles, newspapers, and political documents in the twenty-first century and grew most substantially in the last decade. Most of these sources implicitly or explicitly reproduce the pornography addiction framework that they reference, but scientific studies are more likely than newspaper articles or state resolutions to explicitly challenge or critique a pornography addiction framework. Broad cultural understandings of addiction position neuro-physiological studies as the best equipped to validate pornography addiction since addiction is understood as a “brain disease” (Vrecko 2010a; Netherland 2011), yet these studies are the least likely in our sample to make broad conclusions that pornography is addictive in ways that are similar to drugs, alcohol, or gambling. Most newspaper articles that reference pornography addiction take for granted the concept and therefore implicitly support it, yet the articles most often mention public figures who are not neuroscientists of addiction and are instead activists, politicians, religious figures, and therapists. All state resolutions in our sample explicitly support pornography addiction as a concept and rely on biomedical language to construct pornography as a threat not only to individual consumers but also to broader groups and communities. This reliance on biomedical language allows political actors to present a seemingly objective and factual account of the harms of pornography that are more convincing than claims about morality that may seem outdated or out of place in the political sphere (Thomas 2013; Strub 2010).

Our analysis of how arenas of public discourse construct harms associated with pornography addiction illustrates the social and political

stakes of biomedicalized concepts related to sexuality. Just as sociologists of other addictions argue that the shared understanding of addiction as “biological” is made meaningful only through social situations (Keane 2002; Weinberg 2002), we find that public discourses construct pornography addiction as a social problem by articulating a wide range of harms, including direct harms to consumers and indirect harms to broader society. These discourses do more than pathologize pornography itself but also pathologize individuals and relationships that fall outside of normative definitions of gender and sexuality. Most scientific, newspaper, and government sources support the idea that pornography addiction causes negative health consequences for young men who, according to these sources, are the most likely consumers of pornography. By positioning men as victims of their sexual addictions, these sources perpetuate stereotypes about men’s uncontrollable sexual urges and their natural tendency toward sexual aggression and even violence. Inversely, the lack of discussion surrounding women and pornography consumption implies that women do not experience these strong sexual urges and instead serve to temper men’s sexuality (see also Irvine 2005 [1990]; Westbrook and Schilt 2014).

Political actors, and to a lesser extent the media, also present pornography as biologically addictive in order to describe a number of indirect harms that impact groups, communities, and broader society beyond male consumers themselves. By focusing on the so-called harms that pornography addiction causes, these sources implicitly protect male consumers and bypass potential blame directed at men. Notably, the idea that pornography harms women is less common in pornography addiction discourse than the idea that pornography harms men’s relationships with women. Thus, critiques of patriarchy, which dominated the anti-pornography movement in the 1980s (Duggan and Hunter 2006; Whittier 2018), are less salient in public discussion of pornography addiction. Instead, pornography addiction discourse emphasizes men as the victims of pornography and the subsequent problems of strained heterosexual relationships, sex trafficking and other forms of criminal activities, and “deviant” sexual interests. Scientific studies are the least likely sources to support the relationship between pornography addiction and all of these harms, suggesting that journalists and political actors are overextending scientific findings to

advance their media markets and political agendas. These sources use the meaning of pornography addiction to codify gender stereotypes and normative heterosexuality and to reinforce a particular sense of the social good.

About the Authors

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Notes

1. For all of our data sources (PubMed, LexisNexis, and state government resolutions), we excluded articles on child pornography because news, science, and political documents describe consumers of this type of pornography in distinctly pathological ways that qualitatively differ from other discussions of pornography consumption.
2. The National Center for Sexual Exploitation (NCOSE) is a 501(c)(3) nonprofit organization describing itself as a “leading national organization exposing the links between all forms of sexual exploitation such as child sexual abuse, prostitution, sex trafficking and the public health crisis of pornography.” All state resolutions include language similar to NCOSE’s “model resolution” (https://endsexualexploitation.org/wp-content/uploads/Pornography-Public-Health-Crisis-Resolution_Draft-Feb-2016.pdf) from February 2016 but none explicitly reference NCOSE in the text of the resolution. This model mentions Utah, which is the first state to adopt a resolution using this language. We do not know if authors of remaining resolutions base them on the Utah resolution, the NCOSE model, or both.
3. Although resolutions do not cite specific scientific research, the model resolution created by the National Center for Sexual Exploitation (see Note 2) cites scientific journal articles (most that are psycho-social rather than neuro-physiological) and a survey conducted by an evangelical-affiliated research firm, the Barna Group. Additionally, legislative floor debates may have included research citations but those fall beyond the scope of this study.

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EXHIBIT 10

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Self-Perceived Effects of Pornography Consumption

Gert Martin Hald · Neil M. Malamuth

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Abstract The self-perceived effects of “hardcore” pornography consumption were studied in a large representative sample of young adult Danish men and women aged 18–30. Using a survey that included the newly developed Pornography Consumption Effect Scale, we assessed participants’ reports of how pornography has affected them personally in various areas, including their sexual knowledge, attitudes toward sex, attitudes toward and perception of the opposite sex, sex life, and general quality of life. Across all areas investigated, participants reported only small, if any, negative effects with men reporting slightly more negative effects than women. In contrast, moderate positive effects were generally reported by both men and women, with men reporting significantly more positive effects than women. For both sexes, sexual background factors were found to significantly predict both positive and negative effects of pornography consumption. Although the proportion of variance in positive effects accounted for by sexual background factors was substantial, it was small for negative effects. We discuss how the findings may be interpreted differently by supporters and opponents of pornography due to the reliance in this study on reported self-perceptions of effects. Nonetheless, we conclude that the overall findings suggest that

many young Danish adults believe that pornography has had primarily a positive effect on various aspects of their lives.

Keywords Pornography · Sex differences · Denmark · Sexuality · Sex

Introduction

The effects of pornography exposure on consumers is a topic that has been highly debated and frequently studied. One methodological approach that has seldom been used in this area consists of studying consumers’ beliefs about how their own reports with pornography may have affected them, if at all. In the popular media, using interviews with selected individuals, a variety of primarily adverse effects have been reported including “wrecking marriages,” negatively changing men’s perceptions of women and women’s perceptions of themselves, and sexual addiction (e.g., Paul, 2005). However, given the methodological approach (i.e., interviews with selected individuals), it is impossible to know how representative these reports are. Rather than relying on such few selected interviewees, the present study used a relatively extensive survey with a representative sample of young Danish women and men.

Survey research that has focused on perceived effects of pornography has often emphasized “third person” effects. This refers to the phenomenon that individuals ascribe greater effect of media (e.g., pornography) to others than to themselves (Davidson, 1983, Lo & Paddon, 2000). According to Gunther (1995), the third person effect entails two main components. The first, the perceptual component, refers to the tendency of people to estimate that media will influence others more than themselves. The second, the behavioral component, refers to the tendency of people to react in accordance with the

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perceptual bias,¹ i.e., the size of the difference between perceived effects on oneself (first person effects) and perceived effects on others (third person effects). The impact of such reactions could be the support of censorship of certain types of media such as pornography. Research has provided support for some, but not all, aspects of this model. For example, Lo and Paddon (2000), in a large scale Taiwanese questionnaire study, found that perceived harm on others actually was a better predictor for support of restrictions on pornography than the magnitude of the perceptual bias.

One if the mechanisms underlying the “third person effect” may well be the phenomenon of biased optimism, whereby people consider themselves less likely to be influenced by negative events than they do others (Weinstein, 1989). Given that people generally consider themselves relatively immune to harmful media effects (Gunther, 1995), limited negative self-reported or first person effects of pornography consumption may be expected. Nevertheless, if the accounts described above based on highly selected interviews are at all representative, we would expect that at least a sizeable proportion of a representative sample would report some negative effects of pornography on themselves, while at the same time possibly believing that others would be harmed even more.

Sex differences in almost all areas of pornography consumption are well documented. Compared to women, men have been found to consume more pornography, be exposed to pornography at a younger age, use pornography more often during masturbation, be more attracted to both a wider range of hardcore pornography and hardcore pornography devoid of relationship context and emotional attachments, and generally, although with some exceptions (e.g., Fisher & Byrne, 1989), be more psychologically aroused by pornography. Furthermore, men more than women have been found to prefer pornography with many different actors as compared to pornography with the same actors performing different acts (Gardos & Mosher, 1999; Hald, 2006; Janghorbani, Lam, & The Youth Sexuality Study Task Force, 2003; Malamuth, 1996; Mosher & MacLan, 1994; Træen et al., 2004). In the area of attitudes toward pornography (ATP), US, Finish, Norwegian, and Swedish studies all indicate sex differences in ATP (e.g., Herman & Border, 1983; Kontula & Haavio-Mannila, 1995; Lewin, 1997; Træen, 1998; Træen, Spitznogle, & Beverfjord, 2004). In these studies, it was found that women more than men favored restrictions on pornography and were more likely to describe pornography as dull, not exciting, or repulsive. Similarly, men more than women expressed more positive ATP and were more likely to view pornography as a means of sexual enhancement (Træen et al., 2004).

Research generally supports the notion that sexual background variables are related to pornography consumption. For example, Lewin (1997), in a Swedish survey study, found a positive relationship between number of sexual partners during the past year and pornography consumption during the same time. This finding was replicated in a large survey study of the Norwegian population where it was found that number of sex partners was associated with use of pornography in all media (Træen, Sørheim-Nilsen, & Stigum, 2006). Also, in this study, it was found that experience with group sex predicted amount of exposure to pornography in all media. Janghorbani et al. (2003), in a large survey study of young adults from Hong Kong, found that number of sexual partners and frequency of masturbation during the past week were associated with sexual media use. Furthermore, Haavio-Mannila and Kontula (2003), using a Finish population sample, found that pornography consumption seemed especially high for highly sexually active individuals and that those with a higher frequency of masturbation also used more pornography. These findings essentially mirror past studies of older data. For example, Wallace (1973), Athanasiou and Shaver (1971), and Coles and Shamp (1984) found that sexual attitudes and sexual experience were key predictors of use of sexual explicit materials. Based on these past and more present findings, we believe that key sexual background variables may also be of relevance in predicting self-reported effects of pornography consumption.

One of the key background variables which has been shown to be important in other areas of media research (e.g., Huesmann & Eron, 1986; Huesmann, Moise, Podolski, & Eron, 2003) but has only been examined to a limited degree in pornography research has been consumers’ perceived realism of the portrayals. Such perceptions are likely to be important mediators of whether consumers may influence their beliefs and attitudes or behaviors in the real world. This has been well illustrated by a recent study in the area of sexually explicit media. Peter and Valkenburg (2006) found among Dutch adolescents that exposure to sexually explicit online material significantly affected adolescents’ attitudes towards sex, with this relationship being largely mediated by the extent to which the adolescents’ perceived the sexual material as realistic. Pornography, while depicting people actually engaging in sexual acts, often portrays an unrealistic picture of sexuality as it is practiced in real life (Paul, 2005). Because this dimension of realism has not been well explored in empirical research in this area, we were particularly interested in whether those who believed pornography had particularly positive effects believed that it portrayed sexuality in an unrealistic or highly fantasized manner or whether they perceived it as more realistic.

Based on the above, the following three hypotheses were tested in the present study:

¹ The perceptual bias has also elsewhere been referred to as the perceptual gap or discrepancy (e.g., Lasorsa, 1989; Rojas, Shah, & Faber, 1996; Tiedge, Silverblatt, Havice, & Rosenfeld, 1991).

Hypothesis 1: Men and women will report larger positive than negative effects of hardcore pornography consumption.

Hypothesis 2: Men will report more positive and less negative effects of hardcore pornography consumption than women.

Hypothesis 3: For both genders, sexual background variables will significantly predict the overall report of both negative and positive effects of hardcore pornography consumption.

To investigate the three hypotheses, we developed the Pornography Consumption Effect Scale (PCES), which is presented in this study. To our knowledge, a scale of this type has not previously been developed and validated using a large representative sample.

Method

Participants

Participant were 688 young heterosexual Danish men ($n = 316$) and women ($n = 372$) aged 18–30 years. Mean age of participants was 24.64 years (SD, 3.76) for men and 24.39 (SD, 3.72) for women. Sociodemographic characteristics (age, primary and secondary education, further education, province of residence, and city size of residence) of the participants were checked against the general population of young adults aged 18–30 living in Denmark using Statistics Denmark. This control database contains detailed information on the Danish society. Except for level of education, participants were found to be representative of young Danish adults living in Denmark. Thus, participants in the current sample were found to be slightly higher educated than the general Danish population of young adults aged 18–30. Further details of the participant sample can be found in Hald (2006)

Procedure

In October 2003, a stratified sample of 1,002 young adult men ($n = 501$) and women ($n = 501$) was randomly selected among all young Danish adults aged 18–30 living in Denmark using The Central Person Register. The Central Person Register contains personal information and addresses of the Danish population ($N = 5.4$ million). The sample was stratified on the basis of gender (equal male/female ratio), age (18–30 years; equal age distribution), place of birth (Denmark), and citizenship (Danish). From October 2003 to June 2004, all randomly selected young adults were contacted by mail on three separate occasions and invited to participate in an anonymous survey study on sexuality by completing an enclosed questionnaire and returning it in an enclosed

pre-addressed, pre-stamped envelope. A total of 688 out of 959 eligible participants returned the questionnaire. Consequently, the response rate of the final sample was 65.6% for men ($n = 316$) and 78.0% for women ($n = 372$) ($\chi^2 = 14.55, p = .0001$). Further details of the sampling procedure can be found in Hald (2006)

Measures

On the basis of other international studies of sexuality and pornography (e.g., Barak, Fisher, Belfry, & Lashambe, 1999, Frable, Johnson, & Kellman, 1997), the Pornography Consumption Questionnaire (PCQ) was developed. The PCQ consisted of 139 items and was divided into four parts.

Part one, two, and three of the questionnaire consisted of a short instruction, a standardized definition of pornography,² and items related to sociodemographic characteristics, pornography exposure patterns, and sexual behavior. More detailed information on the first three parts of the questionnaire and results pertaining to these can be found in Hald (2006)

Part four of the PCQ consisted of the 64 item Pornography Consumption Effect Scale (PCES) (later reduced to 47 items; see below). The PCES was used to measure self-perceived effects of hardcore pornography consumption on participants' sexual behaviors or sex life, attitudes toward sex, sexual knowledge, life in general, and attitudes towards and perceptions of the opposite gender. For each item, participants were asked to indicate the extent to which they personally reported various effects of consumption using a 7-point Likert scale ranging from 1 (not at all) to 7 (to an extremely large extent) (see Appendix).

An overall Positive Effect Dimension (PED) and an overall Negative Effect Dimension (NED) were created on the basis of the following putative constructs³:

1. *Sex Life* (SL) (5 items for PED; 8 items for NED). The SL construct was used to explore effects of consumption

² Pornography was defined as follows: any kind of material aiming at creating or enhancing sexual feelings or thoughts in the recipient and, at the same time containing explicit exposure and/or descriptions of the genitals, and clear and explicit sexual acts, such as vaginal intercourse, anal intercourse, oral sex, masturbation, bondage, sadomasochism, rape, urine sex, animal sex, etc. It was emphasized that materials containing men and women posing or acting naked such as seen in *Playboy/Playgirl* did not contain clear and explicit sexual acts and were to be disregarded as pornography when completing the questionnaire.

³ It should be noted that although the constructs were similar for the two effect dimensions, the wording of items within each construct necessarily differs. Construct 5, Sexual Knowledge, was unique to the positive effect dimension. The assessment of self-reported positive and negative effects of pornography consumption was conducted separately in line with research showing that these two effect dimensions essentially are independent, rather than being opposites of the same continuum (e.g., Diener, 1994, Diener & Emmons, 1984) The validation process of the PCES further confirmed this dimensional independence as noted.

Table 1 Intercorrelations of the positive effect dimension ($n = 688$)

	1	2	3	4	5	6
1. Sex life		.80*	.80*	.54*	.69*	.91*
2. Attitudes toward sex			.77*	.66*	.70*	.95*
3. Sexual knowledge				.58*	.62*	.88*
4. Perception of and attitudes towards opposite gender					.60*	.72*
5. Life in general						.80*
6. Positive effect dimension						

* $p < .001$ **Table 2** Intercorrelations of the negative effect dimension ($n = 688$)

	1	2	3	4	5
1. Sex life		.55*	.44*	.82*	.97*
2. Attitudes toward sex			.53*	.57*	.70*
3. Perception of and attitudes towards opposite gender				.43*	.56*
4. Life in general					.89*
5. Negative effect dimension					

Note: Missing data excluded

* $p < .001$

on one's sex life and sexual behaviors (e.g., effects on the frequency of sexual activity, sexual experimentation, and sexual performance).

2. *Life in General* (LG) (4 items for PED; 4 items for NED). The LG construct was created to investigate effects of consumption on life in general (e.g., on the quality of life, satisfaction with life, and problems in life).
3. *Perception of and Attitudes Toward the Opposite Gender* (PATOG) (4 items for PED; 3 items for NED). The PATOG construct was used to tap into effects of consumption on the perception of and attitudes towards the opposite gender (e.g., stereotypical perceptions of gender, friendliness toward and respect for the opposite gender).
4. *Attitudes Toward Sex* (ATS) (5 items for PED; 5 items for NED). The ATS construct was created to investigate effects of consumption on Attitudes Toward Sex (e.g., opinions, views, and outlook on sex).
5. *Sexual Knowledge* (SK) (9 items, PED only). The SK construct was used to examine effects of consumption on knowledge of sex and sexual desire (e.g., masturbation, sexual foreplay, oral, vaginal, and anal sex, sexual fantasies, and sexual desires).

Results

Validation of the Pornography Consumption Questionnaire (PCQ)

The underlying dimensionality of the 64 item PCES was investigated using a two step procedure. First, the 64 items

were reduced to a total of 47 items. Items were excluded on the basis of redundancy, small factor loadings on common extracted factors (i.e., $< .30$), very limited or no correlation with other items, and biased or inappropriate wording (see also Field, 2003). Second, correlational-, factorial-, and reliability analyses as reported below were conducted on the remaining 47 items.

Correlational analyses

Overall, the pattern of intercorrelations between constructs organized within the same effect dimension was high (Tables 1, 2). In addition, correlations between constructs and the overall effect dimension were found to be high. The Positive and the Negative Effect Dimension were found not to significantly correlate ($r = .07$), indicating two separate and distinct effect dimensions.⁴

Factor analysis

Various factor analyses and solutions were used to test the underlying dimensionality of the PCES. For the final factor solution, a hierarchical principal axis factoring was employed. First, items which, prior to data collection, were considered to belong to each of the constructs constituting the positive (PED) and the negative (NED) effect dimensions were grouped together. Thus, the PED consisted of a total of five constructs and the NED of a total of four

⁴ A principal axis factoring with oblimin rotation confirmed this finding ($r = .12$).

constructs. Second, a principal axis factor analysis was conducted for each group of items constituting each of the nine constructs. This was done in order to investigate if items also statistically, and not only theoretically, could meaningfully be combined into a single construct, yielding a better overall estimate of that particular construct. With one exception, both the screeplot and the Kaiser-Guttman rule both suggested that only one common factor should be extracted for each of the nine groups of items⁵ i.e., the nine constructs.

Subsequently, for each factor analysis, the factor scores for the first unrotated principal factor were calculated and used as an estimate for that particular construct. Third, for each group of constructs, that is, the five positive and the four negative constructs, a second principal axis factor analysis was conducted using the extracted factor scores of each construct to investigate if the group of construct also statistically, and not only theoretically, could be meaningfully combined into a single underlying effect dimension (factor).

For both factor analyses, the screeplot as well as the Kaiser-Guttman rule suggested that only one common factor should be extracted and thus that constructs could indeed be combined into two underlying unrelated effect dimensions, i.e., a Positive and a Negative Effect Dimension (PED and NED, respectively). Thus, hierarchical principal axis factor analyses supported the theoretical notion of two separate effect dimensions comprised of a number of constructs each measuring various aspects of self-reported effects of pornography consumption.

Results showed that the first extracted factor for the Positive Effect Dimension explained 74.1% of the total variance, with item loadings of .91 for Attitudes Toward Sex, .88 for Sex Life, .85 for Sexual Knowledge, .78 for Daily Life, and .69 for Perception of and Attitudes Towards the Opposite Gender. The first extracted factor for the Negative Effect Dimension was found to explain 65.4% of the total variance with item loadings of .91 for Sex Life, .84 for Daily Life, .66 for Attitudes Toward Sex, and .53 for Perception of and Attitudes Towards the Opposite Gender.

Reliability analyses

The reliability of the nine constructs and the two effect dimensions were investigated using Cronbach's alpha. For

both the constructs and the effect dimensions, the internal consistency was found to be high. Thus, full scale reliability for the Positive Effect Dimension was .91 with reliability estimates of .91 (SL), .90 (SK), .90 (ATS), .87 (DL), and .73 (PATOG) for each construct. Full scale reliability for the Negative Effect Dimension was .82 with reliability estimates of .83 (DL), .81 (ATS), .79 (SL), and .72 (PATOG) for each construct.

Hypothesis testing

Hypothesis 1: Men and women will report significantly larger positive than negative effects of pornography consumption.

Initially, men and women's use of pornography was compared. Significantly more men than women were found to have ever used pornography ($p < .001$). Furthermore, as compared to women, men were found to spend significantly more time on average per week on pornography consumption ($p < .001$) (Table 3)⁶

With one exception noted below, both overall and at each construct of comparison men and women were found to report significantly larger positive than negative effects of pornography consumption (Table 4). In addition, as indicated by Cohen's d ,⁷ these differences were found to be large (range, .76–2.04). Thus, men were found to report significantly larger positive than negative effect of consumption both overall and at each construct of comparison, that is, sex life, life in general, perception of and attitudes towards the opposite gender, and attitudes toward sex (all $ps < .001$). Likewise, women were also found to report significantly larger positive than negative effects of consumption both overall and at each of the following constructs of comparison: sex life, life in general, and attitudes toward sex (all $ps < .001$). The one exception where no significant difference in effect for women was found concerned women's attitudes toward and perception of the opposite gender.

For both sexes, the relationship between effects and pornography consumption was examined using correlational and trend analyses. For men, we found a significant correlation between greater pornography consumption and positive effects ($r = .41$, $n = 268$, $p < .001$) and a linear trend ($F [1, 264] = 48.41$, $p < .001$) revealing that higher amounts of pornography consumption were significantly associated with greater overall perceived positive effects. However, no significant correlation or trend was found for amount of consumption and overall negative effects

⁵ The one exception concerned the Sex Life construct of the Negative Effect Dimension. Here, discrepancy between the screeplot and the Kaiser-Guttman rule was found. The screeplot indicated that only one common factor should be extracted whereas the Kaiser-Guttman rule indicated that two common factors should be extracted. However, with large samples, Field (2003) and Stevens (1992) suggest that the screeplot is used over the Kaiser-Guttman rule to determine the number of common factors which should be extracted. Thus, we decided to extract only one common factor as suggested by the screeplot.

⁶ For more detailed information on consumption patterns and behaviors for the current sample, see Hald (2006)

⁷ In the calculation of Cohen's d , means and SDs were used as follows: Cohen's $d = M_1 - M_2 / \sigma_{\text{pooled}}$ where $\sigma_{\text{pooled}} = \sqrt{[(\sigma_1^2 + \sigma_2^2)/2]}$.

Table 3 Pornography consumption (in %)

Variables	Men		Women		Tests	Effect size Cohen's <i>d</i>
1. Ever used pornography	%	<i>N</i>	%	<i>N</i>		
Yes	97.8	316	79.5	372	$\chi^2 = 54.46^*$, <i>df</i> = 1	.59
No	2.2	316	20.5	372		
2. Frequency distribution of average time of use per week during the past 6 months in min ^a					$U = 21,174^*$, <i>df</i> = 6	.84
0–29	34.9	101	75.7	199		
30–59	15.6	45	9.5	25		
60–89	15.9	46	6.8	18		
90–119	6.2	18	2.3	6		
120–149	6.2	18	1.1	3		
150–179	3.5	10	0.4	1		
181+	17.7	51	4.2	11		
3. Average time of use per week during the past 6 months in min ^a						
<i>M</i>	80.8		21.9		$t = 9.08^*$, <i>df</i> = 412	.89
<i>SD</i>	98.1		46.3			
<i>N</i>	285		260			

Note: Missing values excluded

^a Only participants who indicated to having ever used pornography were included in the analyses

* $p < .001$

Table 4 Comparison of mean differences in positive and negative effects of pornography consumption by gender

Variables	MD _{Positive-Negative}			Tests	Effect size Cohen's <i>d</i> ^a
Men	<i>M</i>	<i>SD</i>	<i>N</i>		
Sex life	2.10	1.47	296	$t = 24.54^*$, <i>df</i> = 295	2.04
Attitudes towards sex	1.76	1.31	297	$t = 23.13^*$, <i>df</i> = 296	1.76
Perception & attitudes	.74	1.14	297	$t = 11.13^*$, <i>df</i> = 296	.84
Life in general	1.15	1.43	299	$t = 13.89^*$, <i>df</i> = 298	1.11
Over all	1.54	1.10	283	$t = 23.43^*$, <i>df</i> = 282	1.86
Women					
Sex life	1.68	1.55	274	$t = 17.91^*$, <i>df</i> = 273	1.54
Attitudes towards sex	1.06	1.55	277	$t = 11.33^*$, <i>df</i> = 276	.96
Perception & attitudes	.10	.98	274	<i>ns</i>	
Life in general	.58	1.04	278	$t = 9.34^*$, <i>df</i> = 277	.76
Over all	.93	1.05	269	$t = 14.43^*$, <i>df</i> = 268	1.21

Note: Missing data excluded. Only participants who indicated to having ever watched pornography were included in the analyses

^a Means and SDs were used in the calculation of effect sizes.⁷

* $p < .001$

($r = .08$, $n = 268$, $p = .22$). For women, we also found a significant correlation between greater pornography consumption and positive effects ($r = .45$, $n = 233$, $p < .001$) and a linear trend ($F [1, 228] = 68.41$, $p < .001$) revealing that higher amounts of pornography consumption were significantly associated with greater overall perceived

positive. However again, no significant correlation or trend was found for amount of consumption and overall negative effects ($r = .10$, $n = 233$, $p = .14$). In comparing the magnitude of correlations between pornography consumption and positive effects for men versus women, no sex differences were found ($p > .05$, Fisher's z transformation).

Hypothesis 2: Men will report more positive and less negative effects of pornography consumption than women.

For both genders, small to moderate positive effects of pornography consumption were found. However, both overall and at each construct of comparison, moderate to large significant sex differences in positive effects were found. Thus, both overall and at each construct men were found to report significantly more positive effects of consumption than women (all $ps < .006$; effect range (d), .42–.66) (Table 5)

For both genders, only small negative effects of pornography consumption were found. In addition, only limited significant sex differences in negative effects were evident. Thus, men were found to report significantly larger negative effects of consumption than were women in relation to sex life and life in general (both $ps < .006$). However, no significant sex differences were found for overall negative effect or the negative constructs of attitudes toward sex and perception and attitudes toward the opposite gender.

Overall, data indicated that men reported significantly larger positive effects of consumption than did women. However, contrary to our hypotheses, the results did not show that men reported less negative effects than women. To the contrary, on two of the four constructs, men were found to report significantly *more* negative effect of consumption. Thus, overall, only partial support for the second hypothesis as described above was found.

Hypothesis 3: For both genders, sexual background variables will significantly predict the overall report of both negative and positive effects of hardcore pornography consumption.

In order to examine the third hypotheses, both correlational and multiple regression analyses were employed. Analyses were conducted separately for the two dependent variables of self-reported positive and negative effects of pornography consumption.

As shown in Table 6, simple zero-order correlation analyses among the sexual background variables including gender showed that perceived positive effects of pornography were moderately to strongly correlated with greater pornography consumption, perception of pornography as portraying a realistic picture of sex, and greater frequency of masturbation, a lower age of first exposure to pornography, and with being male. Interestingly, the only variable that did not significantly correlate with perceived positive effects was frequency of sexual intercourse. Perceived negative effects showed significant correlations with being male, lower age at first exposure, less masturbation, lower frequency of intercourse and with greater amount of pornography consumption. Although statistically significant, these correlations were of considerably lower magnitude than those found with positive reported effects.

The variables that correlated significantly with the dependent variable were entered into two regression analyses for each of the self-reported effects of pornography. Using the procedures recommended by Cohen, Cohen, West, and Aiken (2003) and by Aiken and West (1991), these variables were first force entered into the regression and then all two way interactions were allowed free stepwise entry using an F probability criteria of .05 and .10 for removal. Results of these two multiple regression analyses are presented in Table 7 Overall, these analyses showed a high degree of association between the background

Table 5 Gender differences in self-perceived effects of pornography consumption

Variables	Men			Women			T-test for independent samples	Effect size Cohen's d^a
Positive effect on	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>		
Sex life	3.41	1.34	302	2.81	1.50	278	$t = 5.04^*, df = 557$.42
Attitudes towards sex	3.03	1.31	299	2.36	1.37	277	$t = 6.06^*, df = 574$.50
Sexual knowledge	3.27	1.17	298	2.48	1.21	277	$t = 7.94^*, df = 573$.66
Perception & attitudes	2.07	1.07	298	1.50	0.73	274	$t = 7.32^*, df = 527$.62
Life in general	2.43	1.29	300	1.69	1.00	278	$t = 7.76^*, df = 558$.64
Overall positive effect	2.84	1.06	290	2.15	1.06	273	$t = 8.00^*, df = 561$.65
Negative effect on								
Sex life	1.32	.57	297	1.16	.37	274	$t = 4.06^*, df = 516$.33
Attitudes towards sex	1.27	.54	301	1.39	.74	278	<i>ns</i>	
Perception & attitudes	1.32	.63	301	1.40	.80	277	<i>ns</i>	
Life in general	1.29	.65	302	1.11	.40	278	$t = 3.98^*, df = 508$.33
Overall negative effect	1.30	.49	292	1.23	.42	273	<i>ns</i>	

Note: Missing data excluded. Only participants who indicated to having ever watched pornography were included in the analyses

^a Means and SDs were used in the calculation of effect sizes⁷

* $p < .006$

Table 6 Zero-order correlations among background factors and reported positive and negative effects of pornography consumption ($n = 688$)

	1	2	3	4	5	6	7	8
1. Positive reported effects		.07	-.31**	-.20**	.36**	-.01	-.25**	.51**
2. Negative reported effects			-.12*	-.07	-.10*	-.13**	.05	.10*
3. Gender				.30**	-.54**	.09*	.05	-.58
4. Age of first exposure					-.22**	.00	-.03	-.32
5. Frequency of masturbation						-.13**	.03	.60**
6. Frequency of sexual intercourse							-.10**	-.10*
7. Degree of realism in pornography								-.10
8. Pornography consumption								

Note: Missing data excluded

* $p < .05$

** $p < .001$

Table 7 Multiple regression analyses on overall positive and negative effects of pornography consumption using sexual background variables including gender as predictors

Models	Overall prediction equation						
Variable	<i>b</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>	R^2	<i>F</i>
Positive effects of consumption							
Gender	.036	.047	.037	.76	.449		
Age of first exposure	-.039	.040	-.040	-.98	.326		
Frequency of masturbation	.102	.051	.099	2.01	.045		
Degree of realism in pornography	-.217	.038	-.220	-5.76	.000		
Pornography consumption	.420	.051	.432	8.31	.000		
Total						.301	42.99
Negative effects of consumption							
Gender	-.094	.051	-.103	-1.83	.067		
Frequency of masturbation	.013	.057	.013	.23	.819		
Frequency of sexual intercourse	-.110	.043	-.118	-2.56	.010		
Pornography consumption	.020	.056	.022	.37	.715		
Total						.026	4.25

variables and positive effects of pornography but only a low, although significant, degree of association with negative effects. No significant two-way interactions were found to enter significantly into either of the final regression models.

As shown in Table 7, the final regression model for positive self-reported effects of pornography was able to account for 30.1% of the total variance ($R = .55$; adjusted $R^2 = .30$; $p < .001$). After all the variables were entered in the equation, three sexual background variables made statistically significant contributions: Greater pornography consumption, more perceived realism of pornography and higher frequency of masturbation. The final regression model for negative self-reported effects of pornography was able to account for 2.6% of the total variance ($R = .18$; adjusted $R^2 = .026$; $p = .002$). After all the variables were entered in the equation, only one sexual background variable made a statistically significant contribution namely lower frequency of sexual intercourse.

Discussion

This study of self-perceived effects of hardcore pornography consumption found that both men and women generally reported small to moderate positive effects of hardcore pornography consumption and little, if any, negative effects of such consumption. For both genders, the report of overall positive effect of consumption generally was found to be strongly and positively correlated in a linear fashion with amount of hardcore pornography consumption.

As described in the Introduction, one reason why consumers reported very little negative effect of consumption could be the phenomenon of biased optimism. Similarly, it may also be due to a response and attention bias whereby participants' desire for and arousal by pornography leads to negative effects of consumption being minimized or overlooked and positive effects maximized or emphasized. Also, a cultural component may be at play. Participants included in

the current study were all from a very liberal cultural background where pornography is widely available and where attitudes toward pornography traditionally have not been negative. On an individual level, this would likely further reduce the awareness of negative effects and leave more room open for, and acceptance of, any reported positive effects. However, with all of these potential biases in mind, it may also be that participants' reports are veridical and that, at least in the context of a highly liberal and sex educated society, pornography's impact is relatively positive and that media and popular books' reports of highly negative effects on consumers are exaggerated or unfounded.

As proposed in Hypothesis 2, men were found to report significantly more positive effects from consumption than were women. However, Hypothesis 2 also proposed that men would report significantly less negative effects of such consumption than would women. This was not supported. In fact, in the areas of negative effects on sex life and life in general men were found to report significantly *more* negative effect than were women, although the absolute levels of negative effects reported were generally low. This indicates that, although previous studies have found that women more than men described pornography as dull, not entertaining, not exciting, or even repulsive, this did not, at least in our study, translate into significant sex differences in self-perceived negative effects of such consumption neither overall nor in any of the specific areas investigated.

The fact that individuals' self-perceived effects of pornography were generally found to be positive may be interpreted in several ways. The proponents of pornography would argue that the individuals themselves are in the best position to judge such effects (e.g., Abramson & Pinkerton, 1995, Wilson, 1978) and that results from studies such as the current one therefore should be taken at face value.

The critics of pornography have actually described such "desensitization" and gradual greater acceptance of pornography as a result of exposure as one of the most insidious effects of consumption. Consequently, such critics would argue that results from studies such as the current one should be interpreted with great caution. For example, Paul (2005) argued that "the dissemination and availability of pornography inevitably brings about increased individual and societal acceptance" (p. 274). Thus, we recognize that the systematic documentation of self-perceived effects of hardcore pornography does not, in and of itself, provide support for any particular political or policy issue in this area.

Hypothesis 3 predicted that for both genders sexual background factors would predict overall positive and negative effects of pornography consumption. Multivariate regression analyses supported this hypothesis although the proportion of variance accounted for by the predictors in relation to self-reported negative effects were relatively limited although statistically significant. For positive

effects, it was found that consumers with higher pornography consumption who believed that pornography was more realistic and who masturbated more perceived more positive effects of pornography. In contrast to the other analyses performed, in this multiple regression analysis, gender did not enter significantly, most likely because of its high overlap with some of the other independent predictors used in this equation (i.e., pornography consumption and masturbation). Of particular interest is the fact that those consumers who believed that pornography is more realistic were more likely to perceive positive effects on the self. Many proponents of pornography have argued that its users recognize that it is "pure fantasy" and consequently the purported potential adverse effects of some materials, such as violent pornography, are very unlikely (for a review, see Malamuth & Billings, 1986). Taken together with recent research suggesting that perceptions of realism of online sexuality mediate the relationship between exposure and changes in attitudes about appropriate sexual behavior (Peter & Valkenburg, 2006) the data highlight the need for research specifically examining the perceived realism, reactions to and effects of pornography that portrays acts that in real life would be considered abhorrent and/or illegal (e.g., rape pornography). In other settings, this issue may also be of concern with other types of pornography. For example, in countries such as Cambodia where, in contrast to Denmark, children have little sex education and often get much of their information about sexuality from pornography. As noted by (Fordham, 2006), "Pornography creates unreal and unrealistic expectations in the minds of boys and men in regard to their sex lives, frequency of sexual activity, the kinds of acts performed, responsibility and the role of wives in fulfilling men's expectations" (p. 66).

We believe that it is important to include in the assessment of effects of pornography consumption peoples' self-perceived report of these effects. However, based on the findings of the "third person effect," the concept of biased optimism, and a likely response, attention, and cultural bias, we also believe that these perceptions only constitute part of the understanding of what the effects of pornography may be. Consequently, the results of the current study should be considered in conjunction with the results from other non-experimental and experimental studies of pornography (for an overview, see Allen, d'Alessio, & Brezgel, 1995, Bauserman, 1996, Malamuth, Addison, & Koss, 2000).

At first glance, the findings reported herein may appear to contradict some of our other research findings and conclusions, but, as noted below, we believe that the findings are actually supportive of our previous conclusions and overall theoretical approach. In a series of previous studies (e.g., Hald, Malamuth, Pipitan, Yuen, & Koss, 2007, Malamuth et al., 2000, Vega & Malamuth, 2007), we have found that for a small segment of the American male population,

namely those who score relatively high on various risk factors of sexual aggression, there is evidence of an association between pornography consumption and increased likelihood of accepting rape myths and of behaving in a sexually aggressive way. However, the same studies have also revealed that, for the majority of men, similar significant associations have not been found. Furthermore, such research is consistent with the findings of experimental studies that can identify cause and effect under controlled conditions (for a review, see Malamuth & Huppert, 2005). In contrast, however, the present study did not generally find evidence of any negative effects.

This difference might be explained by the fact that in the current study we did not specifically examine individual differences in risk for sexual aggression. They might also be accounted for by the reliance on self-reported effects in the current research versus more “objective” indices of effects in the earlier studies. Yet, another explanation is based on cultural differences and, in fact, it provides support for the overall theoretical framework we have suggested elsewhere.

Indeed, Malamuth et al. (2000) specifically used the example of Denmark to explain likely differences in the effects of pornography across different cultures and suggested that in countries such as Denmark there are relatively few men who would be considered at high risk for sexual aggression. These investigators argued, therefore, that it is likely that in such a culture there would be the same negative effects of pornography as may be found for a small, but significant part of the American population but due to the relative lack of high risk individuals these effects may not easily be identified unless using very large or ‘targeted’ samples of individuals. In support of this argument, Malamuth et al. (2000) noted that there was evidence (e.g., Knack & Keefer, 1997, Zak & Knack, 2001) that Denmark and other countries, such as Sweden, Norway, and the Netherlands, have among the very highest levels of trust between people and considerably higher than in the United States. Malamuth et al. (2000) suggested that this argument could be strengthened if there was more direct evidence of such high trust and lack of hostility between men and women in such countries. A recent study has provided such evidence. Dutton, Straus, and Medeiros (2006) compared gender hostility in samples from 27 nations. Although they did not specifically include Denmark, they did include similar countries, such as the Netherlands and Sweden. These countries were consistently found to have among the very lowest levels of hostility between men and women, with the United States scoring much higher. In keeping with these findings and the theoretical model described elsewhere (e.g., Hald et al., 2006, Malamuth et al., 2000, Malamuth & Pitipitan, 2007), we would consequently predict that even when using self-perceived effects of hardcore pornography consumption, greater perceived negative effects of pornography consumption

would be found in countries where the levels of hostility between men and women and other indices of risk for sexual aggression are higher than in countries such as Denmark.

It would be desirable in such future research to particularly include some men who are considered to be at relatively high risk for sexual aggression. Ideally, such a high risk sub-group would be “over-sampled” in order to include a sufficient number of these men to test the assertion that they are the ones more likely to report negative self-perceived impact of heavy levels of hardcore pornography consumption. Nonetheless, on the basis of the current sample and data, the conclusion that is most clearly supported is that many young Danish adults believe that pornography has had a largely positive role in their lives.

Appendix

The Pornography Consumption Effect Scale (PCES)

Below is a series of questions. Please indicate your answer to each question using the following scale: 1 = not at all; 2 = to a very small extent; 3 = to a small extent; 4 = to a moderate extent; 5 = to a large extent; 6 = to a very large extent; 7 = to an extremely large extent.

Please write your answer on the line ____ before each question. Please answer all questions.

To what extent do you believe that your consumption of pornography:

- | | | |
|-----|-----------|---|
| 1. | SK (P) | Has taught you new sexual techniques? |
| 2. | ATS (N) | Has made you less tolerant towards sex? |
| 3. | ATS (P) | Has influenced positively your outlook on sex? |
| 4. | PATOG (N) | Has adversely affected your views of the opposite gender? |
| 5. | LG (N) | Overall, has had a harmful effect on your life? |
| 6. | SL (N) | Overall, has been a negative supplement to your sex life? |
| 7. | PATOG (N) | Has led you to view the opposite gender more stereotypically? |
| 8. | SK (P) | Has added to your knowledge of vaginal sexual intercourse? |
| 9. | SK (P) | Has taught you something new about your sexual desires? |
| 10. | LG (N) | Has made you less satisfied with your life? |
| 11. | LG (P) | Overall, has made a valuable contribution to your life? |
| 12. | SL (P) | Overall, has improved your sex life? |
| 13. | SL (N) | Has reduced your sexual activities? |
| 14. | SK (P) | Has added to your knowledge of anal sex? |
| 15. | PATOG (P) | Has positively affected your view of the opposite gender? |
| 16. | SK (P) | Has added to your knowledge of sexual foreplay? |
| 17. | LG (N) | Has made your life more problematic? |
| 18. | ATS (P) | Has made you more tolerant in relation to sex? |

19. ATS (N) Has made you less sexually liberal?
20. PATOG (P) Has made you more respectful towards the opposite gender?
21. SL (P) Has made you experiment more in your sex life?
21. SL (N) Overall, has made your sex life worse?
23. SK (P) Has added to your knowledge of masturbation?
24. LG (P) Has made you more content with your life?
25. LG (N) Has reduced your quality of life?
26. ATS (N) Has had a negative influence on your attitudes toward sex?
27. SL (P) Has increased your sexual activity?
28. SL (P) Overall, has been a positive supplement to your sex life?
29. SK (P) Has improved your knowledge of sex?
30. LG (P) Has improved your quality of life?
31. ATS (P) Has had a positive influence on your attitudes toward sex?
32. ATS (N) Has adversely affected your outlook on sex?
33. SL (P) Has added something positive to your sex life?
34. SL (N) Has made you experiment less in your sex life?
35. PATOG (N) Has made you less respectful towards the opposite gender?
36. PATOG (P) Has made you friendlier towards the opposite gender?
37. ATS (N) Has adversely influenced your opinions of sex?
38. PATOG (P) Has led you to view the opposite gender less stereotypically?
39. SK (P) Has improved your knowledge of oral sex?
40. SL (N) Has led to problems in your sex life?
41. SK (P) Has given you more insight into your sexual fantasies?
42. LG (P) Has made your life less problematic?
43. ATS (P) Has positively influenced your opinions of sex?
44. SL (N) Has added something negative to your sex life?
45. ATS (P) Has made you more sexually liberal?
46. SL (N) Generally, has given you performance anxiety when you are sexually active on your own (e.g., during masturbation)?
47. SL (N) Generally, has given you performance anxiety when you are sexually active with others (e.g., during intercourse, oral sex, etc.)?

Note: Use of this scale requires permission of the corresponding author. SL = Sex life; LG = Life in General; ATS = Attitudes toward sex; PATOG = Perception of and attitudes toward the opposite gender; SK = Sexual knowledge. (P) indicates that the item belongs to the positive effect dimension. (N) indicates that the item belongs to the negative effect dimension.

Scoring instructions

The PCES is intended to be used as a measure of self-perceived overall positive and/or negative effects of pornography consumption by averaging the score for the positive and negative effect dimensions, respectively. Alternatively, specific areas of interest may be targeted by

averaging the score for items constituting these areas. For example, if one wishes to investigate only self-perceived positive effects of pornography consumption on sex life, this could be done by averaging the scores for item 12, 21, 27, 28, 33, constituting the SL (P) construct.

Overall Positive Effect = average of the following items: 1, 3, 8, 9, 11, 12, 14, 15, 16, 18, 20, 21, 23, 24, 27, 28, 29, 30, 31, 33, 36, 38, 39, 41, 42, 43, 45.

Overall Negative Effect = average of the following items: 2, 4, 5, 6, 7, 10, 13, 17, 19, 22, 25, 26, 32, 34, 35, 37, 40, 44, 46, 47.

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EXHIBIT 11

The Emperor Has No Clothes: A Review of the ‘Pornography Addiction’ Model

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Abstract The addiction model is rarely used to describe high-frequency use of visual sexual stimuli (VSS) in research, yet common in media and clinical practice. The theory and research behind ‘pornography addiction’ is hindered by poor experimental designs, limited methodological rigor, and lack of model specification. The history and limitations of addiction models are reviewed, including how VSS fails to meet standards of addiction. These include how VSS use can reduce health-risk behaviors. Proposed negative effects, including erectile problems, difficulty regulating sexual feelings, and neuroadaptations are discussed as non-pathological evidence of learning. Individuals reporting ‘addictive’ use of VSS could be better conceptualized by considering issues such as gender, sexual orientation, libido, desire for sensation, with internal and external conflicts influenced by religiosity and desire discrepancy. Since a large, lucrative industry has promised treatments for pornography addiction despite this poor evidence, scientific psychologists are called to declare the emperor (treatment industry) has no clothes (supporting evidence). When faced with such complaints, clinicians are encouraged to address behaviors without conjuring addiction labels.

Keywords Pornography addiction · Pornography addiction model · Visual sexual stimulus (VSS) · Libido · Sensation-seeking · Erectile dysfunction · Addiction model · Impulsivity · Compulsivity

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Introduction

‘Pornography addiction’ is one label that has been used specifically to describe the high-frequency viewing of sexual images. Related concepts, such as ‘sex addiction’ or ‘internet addiction’ refer to broader constellations of behaviors. These address problem sexual (e.g., financial loss with high involvement with sex workers) or internet (e.g., web browsing in lieu of any family time) behaviors broadly. Competing models of high-frequency viewing of sexual images also have been offered, such as sexual compulsivity [1]. Some have claimed to abdicate models by using terms like ‘hypersexual disorder’, but these authors are still using a model of pathology. In this manuscript, we specifically critique the addiction model of high use of visual sexual stimuli.

Scientists investigating high-frequency sexual behaviors rarely describe these behaviors as an addiction (37 % of articles) [2•]. In fact, most scientists have overtly rejected the addiction model [3, 4]. The recent revision of the Diagnostic and Statistical Manual (DSM) similarly did not include sex addiction, citing “To include this as an addiction would require published scientific research that does not exist at this time” (Charles O’Brien, personal communication, September 19, 2013). Widely cited critiques of addiction models have been leveled against other behaviors as well, including food [5, 6], internet use [7], and gambling [8]. The perseverance of this term in the popular press and by some treatment providers is puzzling. The pseudoscientific practices surrounding the treatment of ‘porn addiction’ compel us to reveal that the emperor is not wearing any clothes [9].

The overwhelming majority of patients seeking help for high-frequency sexual problems report that frequency of viewing sexual stimuli is their main, or primary, problem [10]. The addiction model of visual sexual stimuli (VSS) viewing continues to be popular in the media and appears in the journal name of a clinical society focused on treatment issues (*Sexual Addiction and Compulsivity*). The current

review is specifically critical of addiction as an appropriate model for the high-frequency viewing of VSS, sometimes referred to as ‘pornography addiction’. (Studies of ‘addiction’ to sexual imagery overwhelmingly use the biased term ‘pornography’ [11] Since many benefits of sexual stimuli also have been identified (see below), we follow the APA recommendation to use less biased language [12•]. The empirically accurate term ‘visual sexual stimuli’ (VSS is used instead of ‘pornography’. Other models for high-frequency VSS viewing are suggested, including non-pathology models.

Some have suggested that easier access to sexual films online is responsible for creating an epidemic of porn addiction [13] Emotional images with movement significantly increase arousal over still images across a variety of domains [14] Moreover, motion may be important for generating motivated states, such as generating actual fear to phobic objects rather than mere unpleasant affect [15] Greater complexity (e.g., number of scene changes) in the films is known to impact posterior, but not anterior, cortical sites on the brain [16] The more interest a person reports in a film, the greater their frontal alpha suppression during the film [16] This finding was recently extended in response to sexual films [17] In summary, sexual films, like other emotional films, engage the brain in ways consistent with high arousal, motivated states. The brain appears to respond similarly with sexual and other emotional films.

VSS use does not appear to be increasing despite increased availability. Fluctuations in VSS formats and legislation in recent decades helps to clarify this issue. VSS viewing in the USA has remained remarkably steady (near 22 %) since 1973, showing the greatest change with the introduction of the VCR after a period of legal prohibition [18] Of those over age 18, 75 % now have regular internet access with 60 % reporting broadband at home and 55 % accessing the internet wirelessly [19] In contrast to frequent claims in the popular media about an epidemic of porn use, no change in the last 4 decades has been noted in more detailed longitudinal data since internet access increased [20] Further, searches for ‘sex’ (Google Analytics) appear stable since data collection started in 2004. It is possible that something about the films has changed over time, altering its effect. For example, those studying video games investigate changing ‘realism’ as predictors of the changing effects of video games [21] Given that visual erotica has long appeared in film, realism is probably not the best parallel for VSS changes over time. No data have yet been offered to suggest how the VSS format or content may have changed over decades. VSS viewing appears very stable, with a larger change in viewing with the introduction of the VCR, not internet availability.

The prevalence of VSS problems reported is inconsistent. Clinicians frequently cite “up to 6 %” of the US population is sexually addicted. This estimate comes from clinical speculation

in a popular book [22] in which the clinician/authors focusing their practice on these issues do not clearly define the boundaries of this diagnosis. Empirical estimates from nationally representative samples are that 0.8 % of men and 0.6 % of women report out of control sexual behaviors that interfere with their daily lives [23] If one assumes these individuals might seek treatment, 82 % of treatment seekers report problems with VSS, and clinicians agree that they have a clinical problem in about 88 % of cases [10] Thus, VSS problems might affect 0.58 % of men and 0.43 % of women in the USA.

Positive Effects of VSS Use

While much has been written about the potential negative effects of VSS, a number of positive effects also have been suggested [24] Most people who view VSS believe that it improves their attitudes towards sexuality [25] and improves their quality of life [26] More VSS viewing has been related to greater likelihood of anal and oral sex [27] and a greater variety of sexual behaviors [28] This increased breadth of sexual behaviors could arise by increasing a person’s feeling of empowerment to suggest new sexual behaviors or by normalizing the behaviors [29] In any case, sexual novelty can increase pleasure in long-term partners. VSS can also promote pleasant feelings in the moment, such as happiness and joy [30, 31] Additionally, VSS may provide a legal outlet for illegal sexual behaviors or desires. Increased VSS consumption or availability has been associated with a decrease in sex offenses [32•], especially child molestation [33, 34] and inhibition of aggression [35] On the other hand, a large longitudinal study controlling for baseline attitudes and behaviors identified that VSS use accounted for only 0–1 % of the variance in gender role attitudes, permissive sexual norms, and sexual harassment in boys or girls [12•]. While much has been written about negative aspects of VSS for the general population, the many possible benefits suggest that VSS use is not problematic *de facto*.

Addiction Model

What is Addiction?

What should be labeled an addiction in the first place [36•]? ‘Addiction’ is a term that is often reified, when it really is being used as a theoretical construct or a model to describe a cluster of behaviors. The question raised in this review is whether VSS viewing could be described using an addiction construct or model, so it may be helpful to consider how the term ‘addiction’ is being used with substances.

DSM-5 introduced the term ‘addiction’ within the broad category ‘Substance-Related and Addictive Disorders’ over

the objections of the working group [37]. However, the term ‘addiction’ was specifically rejected to describe gambling [38] or substance use despite the section title. This suggests some tension over the utility of the addiction framework even for substances and gambling. Presumably, if ‘addiction’ possessed diagnostic or prognostic value, it would be defined and would distinguish clinical cases. Of course, the DSM is hardly the only consensus rejecting the utility of addictions. Increased modern understanding of the effects of various substances such as cannabis has raised questions about the scientific and clinical applicability of the concept as it has historically been defined. As with many other clinical concepts, addiction has seen significant ‘bleed’ as the term has been broadened to describe a wide range of problematic behaviors. While there seems to be a consensus that addiction is a useful construct to describe opiate dependence [39], the usefulness of ‘addiction’ to describe the excessive use of any drug [40], compulsive gambling [41], and excessive video game playing [42] has raised many concerns.

While we generally reject the usefulness of the term, if one is pressed, some commonalities have been suggested by addictions research. A key feature of addiction is the shift from using the drug for pleasure (liking) to using the drug due to need (wanting) [43, 44]. This transition is characterized by the shift from substance use associated with reward and pleasurable effects to cue-elicited compulsive use associated with cue-elicited craving. In other words, motivation shifts towards relieving craving or withdrawal, while the pleasure once associated with the substance recedes [43–45]. Finally, this pattern is associated with long-term changes in the neural circuits involving dopamine, glutamate, and GABA in the fronto-limbic system involving the interconnectedness of the ventral tegmental area, nucleus accumbens, amygdala, and prefrontal cortex [43, 44, 46]. Such a transition and long-term neural changes have yet to be demonstrated in any studies of ‘porn addiction’.

Porn Addiction?

Many have attempted to generalize the patterns related to problem substance use to explain other behavior problems, including use of VSS [47]. Surprisingly, a clear, falsifiable theoretical model of ‘porn addiction’ has yet to be described. Some use addiction interchangeably with other labels such as hypersexual disorder (HD) – also known as sexual addiction [48]. Others define addiction broadly to refer to any substance or behavior with evidence of excessive appetite: “appetitive behaviour is excessive, at least in the statistical sense” [49]. Simply because a behavior is appetitive and frequently engaged does not mean the behavior is a problem, let alone an addiction. Even when consequences, distress, or dysfunction follow such behaviors, interaction with third variables, such as relationship status or culture, must first be examined.

Research concerning VSS use problems is also unusually weak, making any support for an addiction model necessarily weak. For example, studies usually fail to define the term ‘pornography’, either for participants or operationalized in the manuscript, and do not use psychometrically tested questionnaires to assess the types of VSS consumed [50]. Döring [51••] summarized research on VSS as “one seldom encounters more sophisticated research designs” where “one-shot studies are the rule”, positive effects are rarely assessed, and cross-sectional data cannot establish causality (p. 1098). A review by Mudry et al. [2••] identified that a mere 27 % (13 of 49) of articles concerning high-frequency sexual behaviors contained actual data. In 2013, only a single psychophysiological study on the topic appeared [52]. In other words, most publications that might be relevant for VSS addiction models contain no data, and those that contain data generally are weak scientifically.

Given the absence of a clear model, a substance addiction model is used in this review as a basis to evaluate the sex addiction model. Using a substance addiction model means comparing the extent to which VSS ‘addictions’ resemble features of substance addictions. No doubt some will object to this framework, but no falsifiable alternative has been specified. For example, Griffiths [53] describes “behavioural addictions feature the core components of addiction (i.e., salience, mood modification, tolerance, withdrawal, conflict and relapse)”. Others go so far as to recommend treatment parallel to 12-step interventions [54]. Clearly, the substance addictions model is being applied in pornography addiction.

We specifically review the appropriateness of ‘porn addiction’ with respect to its possible negative consequences, lack of control reported in viewing behaviors, and any neural evidence supporting a shift to wanting/craving rather than liking. Not every aspect of substance addiction models can be discussed. After these comparisons with substance addictions, possible alternative models of high-frequency VSS use are reviewed, including the possibility that no pathology exists.

Negative Consequences of High Use of VSS

High levels of VSS use alone are often alleged to cause negative life consequences, increased health-risk behaviors, as well as social and relational difficulties. These negative consequences are commonly identified as hallmark ‘dysfunction’ criteria to support the diagnosis of porn addiction. However, these negative consequences are not well established, and the causal link with VSS use is not clear.

High VSS Use Associations with Health-Risk Behaviors?

Cross-sectional studies have identified relationships between sex addiction and more unprotected anal sex [55], having

more previously unknown partners [56], and a greater likelihood of having ever paid for sex [57]. However, none of these address VSS use. In fact, some have argued that VSS use and masturbation may *reduce* health-risk behaviors by managing sex drive effectively and safely [58, 59]. Using data from the very large, representative longitudinal General Social Survey, Wright [60•] similarly found VSS use and engagement in casual sex were related only in those who reported unhappiness and low life satisfaction. Similarly, political ideology moderated the apparent relationship between VSS use and casual sex partners [20]. No study has demonstrated a direct, causal link between VSS use and health-risk behaviors.

Erectile Dysfunction and High VSS Use?

While no empirical claims tying erectile function and ‘porn addiction’ were identified, this is a frequent media claim. Two research groups studied erectile dysfunction (ED) specifically in young men. In one study, 26 % of men seeking treatment for first-onset ED were under age 40 [61•]. The main predictors of ED specific to the younger men were smoking and illicit drug use. Another study of men age 18–25 found 30 % reported ED [62]. Again, ED appeared primarily related to illicit drug use, but also depression and poor physical health. Neither study measured or conjectured about VSS use. Considering another study showed no differences during VSS viewing in the brains of men with and without ED [63], it is difficult to find evidence for a rise in ED in young men attributable to VSS use.

VSS viewing is almost always accompanied by masturbation [10], suggesting several mechanisms by which high-frequency VSS viewing could contribute to difficulties getting or sustaining an erection. However, both reflect basic physiology and learning principles, not pathology. First, men exhibit refractory periods. Refractory periods refer to the latency after an orgasm during which subsequent erection and orgasm are more difficult (for review, see Levin [64]). Sperm factors are affected positively by the latency since last ejaculation [65, 66], leading to speculation that refractory periods function to pace reproductive copulation. Increased VSS use means more recent orgasms, thus a male who views VSS more frequently is more likely to be within a refractory period when partnered sex is attempted.

The other non-pathological mechanism by which VSS viewing might contribute to decreased erections is learning. Sexual response can be conditioned to images of a penny jar [67], to specific sexual images using vibratory stimuli [68], and using sexual films as the unconditioned stimulus [69]. Even rodents appear unable to behave sexually in the absence of a conditioned jacket [70•]. Sexual responses also habituate [71–74]. In fact, habituation to sexual stimuli is faster than habituation to negative stimuli [75]. Physiology and learning, not addiction, can explain any links between VSS use and erections. In other words, increasing VSS use could lead to

ED, but the causal mechanism is most parsimoniously explained by processes other than addiction.

Failure to Inhibit VSS Use

Anecdotal reports of addiction often describe individuals reporting difficulty controlling their use of VSS. To parallel substance addictions, VSS use should also be difficult to inhibit. However, a laboratory study did not identify any relationship between the ability to self-regulate sexual arousal to VSS and measures of hypersexual problems [76]. This finding was recently extended to demonstrate that sexual desire levels, not hypersexual problems, predict how well a person up- and down-regulates their sexual responses to VSS [77]. Similarly, sex addiction patients report dysexecutive problems [78], but do not actually exhibit them when tested [79]. If there is not actually any evidence for dysregulation, what might explain their reports of problems regulating VSS use?

Some have cited personal religious values as providing a conflict between their VSS use and feeling unable to stop. Religious conflict was the main reason cited for problems viewing VSS in one study [80]. Those who want treatment for sex addiction are also more likely to be members of organized religion and hold strong religious values [81•, 82]. However, the reverse was not true: religiosity explained little variance (3 %) in the decision to use VSS [83]. Far more people report a feeling of inability to control their VSS use, than actually report life difficulties resulting from their use [23]. Feeling unable to stop may reflect personal value conflicts with normal VSS use. No data currently support the notion that ‘porn addicts’ have difficulty inhibiting their VSS use.

Neuroadaptations to VSS Use

Data consistently demonstrate the ability of substances to shift brain response to craving, rather than liking, states. The same cannot be said of VSS. Sexual images are known to evoke stronger motivation than other pleasant images, manifesting in a variety of physiological indicators [84, 85]. Sexual images and films increase blood flow to many areas of the brain, including those associated with reward, relative to neutral films (for review, see Kühn and Gallinat [86]). VSS also provoke increases in dopamine-tagged ligands in PET [87, 88]. Also, VSS appear pleasant and rewarding to both men and women in fMRI studies [89]. This appears to fulfill the initial liking present in the development of substance addictions [90] and offers some commonalities with substance reinforcement [91], but in no case has a shift away from liking to wanting or craving been demonstrated.

In fact, no data have demonstrated that VSS are different from any other ‘liked’ activity or object [92•]. This is

important, because pathology should be conceptually distinct, not merely those on the high end of a construct like sexual desire [93]. For example, Florida students respond with increased late positive brain potentials to images of their adored Gator team over images of other sports [94]. Similarly, those who have no problems with their eating still exhibit greater frontal alpha asymmetry to images of delicious desserts (EEG [95]) and striatal activity specifically increases to preferred chocolate brands (fMRI [96]). Also, activity in the left nucleus accumbens to delicious foods positively predicts BMI change prospectively [97] in those without any known eating pathology. Those who enjoy extreme sports also show differential modulation of the brain response (P300) not associated with pathology [98]. In summary, stronger neural responses occur to any enjoyed activity that is not pathological [99]. Thus, stronger activation to VSS in those reporting liking VSS more are both expected and non-pathological.

VSS processing can further be associated with state and trait differences, which would be necessary to associate ‘addicts’ responses. Activation of entorhinal cortex activity is lesser in those who report hypoactive sexual desire problems [100]. Left insula and right thalamus activity is lesser to VSS in those with lower levels of sexual desire [101]. Further, frontal alpha asymmetry to sexual films are also related to reported sexual arousal, particularly in women [17]. However, no shift in neural response in ‘porn addicts’ has been demonstrated.

Substance use problems appear heritable, suggesting a biological susceptibility. For example, those with higher genetic risk for alcoholism similarly are more reactive to alcohol cues [102]. Sexual debut and risk behaviors are heritable (for review, see Harden [103]). Sexual sensitivity also appears heritable, such as with orgasm capacity in women [104, 105]. However, heritable components of VSS use have not been demonstrated.

Δ FosB has recently drawn increased interest in substance addictions. This transcription factor is implicated in epigenetic effects in the nucleus accumbens, via direct D1 pathways, that occur in both normal reward learning and drug taking [106]. This is being interpreted as a mechanism by which drugs may chronically decrease dopamine signaling [107]. Similar changes have been demonstrated to food following the administration of high fat diets to rodents [108]. Increased latency to mount and intromission, though not ejaculation, have been observed in sexually experienced male rodents [109]. This was interpreted as evidence of Δ FosB as a “critical mediator for reward reinforcement and natural reward memory”, although sex addiction was not discussed (p. 837). There are serious challenges to measuring Δ FosB in humans, and null results have been reported in humans to date (e.g., in alcoholics in Watanabe et al. [110]). Even more problematic is that the rodent model of

hypersexuality is male on male mounting behaviors [111]. It appears that pathologizing homosexual behaviors would be necessary to test Δ FosB as a mediator in a rodent model of sex addiction. ‘Porn addiction’ languishes without any clear animal model.

Alternative Models

If high-frequency VSS viewing is not usefully described as an addiction, is there a better model to describe those who report problems regulating their VSS viewing and experience negative consequences from it? Several alternative models have been suggested. Before describing the possible pathology models, it is important to note that high-frequency viewing of VSS may not be pathological at all. First, we review several correlates of VSS use that are inconsistent with pathology. Next, we review compulsivity and impulsivity models of these behaviors.

Secondary Gain

The treatment of pornography and sex addiction is a lucrative, largely unregulated industry. The industry makes many claims for treatment and success, with little (to no) published data. Many treatment centers in the USA have emerged claiming to treat sex addiction. The first 20 inpatient facilities advertising on the internet to treat sex and/or porn addiction in the USA were contacted. They averaged a cost of US\$677 ($SD = \403) per day. They required or recommended between 9 days to 9 months minimum of inpatient stay. For example, one center claims their sex addiction treatment is “clinically shown to produce results that are up to 3 times faster and 11 times more effective than traditional treatment methods”, although none of the articles on their website (nor in the literature) actually test sex addiction [112]. The use of medications ‘off-label’ to treat ‘pornography addiction’ also appears common. Drugs originally designed to treat alcoholism, depression, and ED have all been suggested [113, 114]. This therapeutic opportunism is well characterized [115]. Some have advocated for transparency, requiring therapists to inform patients that such therapies are experimental, and have not been tested for sex addiction [116].

Many of the treatment centers and providers also claim religious affiliations, raising questions about the nature of supposed pathology if it is rooted in a particular religion. Some of the most outspoken advocates for an addiction pathology model have publications making explicitly religious arguments against VSS viewing [117–119]. Religiosity is one of the strongest (negative) predictors of problems with internet VSS use [82]. The risk of conflating profit motive and diagnosis in a population vulnerable due to their strong religious beliefs appears high.

VSS Use and Mental Health Problems

VSS use might be elevated due to mental health problems that are not explicitly sexual, such as depression [120]. Those with more frequent use of VSS reported more depressive symptoms, poorer quality of life, lower health status and more days that were diminished due to mental and physical health [121] in addition to more drug and alcohol use [122]. The number of hours one spends viewing VSS also is related ($r=.24$) to the severity of psychological symptoms [123]. These negative relationships appear more common in males. Similarly, those who specifically report problems with VSS were significantly more likely to report current or past psychiatric treatment, mental health therapy, and suicide ideation [124].

Given that positive effects also are common (reviewed above) and the positive and negative effects of VSS use often are even correlated, data are needed to address causality between VSS use and mental health problems. Causality could be supported by demonstrating that (i) the mental health problems occur after the VSS use (or increase with greater VSS use), (ii) third variables do not account for the apparent relationship between mental health problems and VSS use, and (iii) problems increase in a dose-response fashion with greater VSS use. Limited data to date refute each requirement.

When examined over time, mental health problems *do not* follow VSS use. In a large sample of Dutch adolescents, lower life satisfaction predicted greater VSS use at time 2 [125]. This is the reverse of what would be expected if VSS use were causing life dissatisfaction.

VSS use also may be related to a number of other variables that better account for a VSS–mental health relationship. For example, even when loneliness was strongly predicted by overall Internet use, researchers failed to appropriately statistically control for general Internet use and attributed loneliness to VSS use [126]. It is rare that investigators even collect data on such third variables, however, so this study represents a positive step.

Others have reached similar conclusions: “the high comorbidity rates in the present sample call into question the extent to which it is possible to speak of Internet sex addiction as a primary disorder or whether it is more appropriate to view it as a symptom of another underlying mental health problem” [127]. In summary, it is baffling that VSS use is described as ‘comorbid’ with mental health issues (e.g., “comorbid hypersexual behavior and ADHD” in Reid et al. [128]). This language elevates VSS use to disorder status and should be avoided.

VSS Use Explained by Sex Drive

More VSS use is related to higher levels of libido/sexual arousal. Individuals who report being more aroused by VSS

also use VSS more and report higher levels of sexual desire [122, 123, 129, 130]. Two studies directly investigating high desire models found support for these models. In one study, those who desired help regulating their sexual behaviors were only distinguished by a high sexual desire level [81•]. In the second study, neural responses to sexual stimuli were related to sexual desire levels, but not any (of three) measures of sexual addiction [52]. Indirect evidence also comes from a study in which single women looked longer than women in relationships at images of men [131]. Desire discrepancy, rather than low sexual desire, appears central to couples reporting a mismatch of desire [132]. VSS may be blamed for problems really due to a mismatch of sexual needs.

VSS Use Explained by Sensation Seeking

Higher need or desire for sensation is predictive of more frequent use of VSS, in both adolescents and adults [12•, 133, 134]. A higher need for sensation seeking may drive individuals towards forbidden or taboo experiences, may be connected to higher libido, may result from increased VSS use, or may dispose individuals to use exciting sexual stimuli or experiences as a form of emotional coping. Little information exists as to whether sensation seeking acts as a disposing characteristic, is a result of use of VSS and other sexually adventurous behaviors, or is bidirectional. Future research may further elucidate the connections between this variable and problems related to VSS.

VSS Use as Effective Affect Regulation

Individuals report using VSS to cope with negative emotions, and such use is frequently identified as a core symptom of sex addiction. Although this strategy may contribute to relationship conflict [124, 135], VSS are likely effective for regulating emotion. Like other emotional images, VSS capture cognitive resources effectively [136]. Distraction is an effective method for reducing negative affect [137]. Although distraction is relatively less effective for regulating emotions than other strategies [138], distraction also requires less effort than other strategies [139]. Thus, VSS appear likely to be effective in improving mood, possibly in similar ways to pleasant cartoons [55]. Recent experimental evidence suggested that people with problems regulating their viewing of VSS respond with similarly positive emotions while viewing VSS to people without problems [140]. Those with higher sexual compulsivity also appear more prone to respond with increased interest (assessed by attractiveness ratings and gaze direction) to flirtatious faces after a shame induction than those with lower sexual compulsivity [141]. Data have not yet demonstrated that using VSS to regulate mood is ineffective or leads to specific problems.

VSS Use and Sexual Orientation

Studies that examine rates of VSS use consistently find high rates of use in men who self-identify as gay or bisexual. Cooper et al. [142] described overrepresentation of men who have sex with men (MSM) in groups reporting the highest rates of use of VSS. Studies examining rates of VSS use in nationally representative samples find higher rates of VSS use in both adolescents and adults who identify as other than heterosexual [133], as do studies of clinical samples [143]. Trials of DSM-5 hypersexual disorder criteria found that MSM were more than three times as likely to be in such treatment settings, compared with rates of MSM in comparable substance abuse or mental health facilities [144].

Increased use of VSS in these populations may reflect adaptive strategies. MSM may be more likely to seek information and stimuli consistent with their sexual orientation. This may reflect a common component of the ‘coming-out process’ of forming a stable sexual identity [145]. In other words, VSS use could reflect the behaviors of a disenfranchised group seeking safe, anonymous venues to explore their sexual needs, or may reflect unique aspects of homosexual culture. It also may simply reflect the higher sexual drive of men (see above). Studies that examine use of VSS in MSM find that these men overwhelmingly endorse these positive benefits from VSS use [146]. Rates of VSS use in MSM may reflect unique aspects of homosexuality, aspects of male sexuality, or both.

Impulsivity

Impulsivity broadly refers to a sudden urge to respond to a (internal or external) cue with less executive mediation than is probably appropriate. In VSS use, this might mean noticing a sexual cue and beginning to use VSS with little consideration for other immediate time demands. Measures of impulsivity correlate moderately with measures of sexual compulsivity and experiential avoidance [147] and sexual arousal reported to VSS [148]. A pilot study ($N=16$) suggested that patients made more errors on a task indicative of impulsivity than controls [149]. A recent evoked response potential study further supported this model, identifying that those reporting problems regulating their VSS use exhibited decreased neural motivation to sexual images [150]. New fMRI models suggest impulsivity might reflect a greater isolation of prefrontal brain areas from appetitive-associated subcortical structures [151]. A larger body of experimental work appears available to guide future investigations testing an impulsivity model of high-frequency VSS use.

Compulsivity

Compulsivity broadly refers to the perseveration of behaviors, which could characterize repeatedly returning to VSS. Some

have argued that compulsive behaviors are best viewed as a type of impulsivity [114]. However, perseveration is distinguishable from impulsive problems in the brain. Orbitofrontal lesions in rodent models specifically provoke perseveration, separating these from discrimination errors affected by dorsal anterior cingulate cortex lesions [54]. Differences between impulsive and compulsive behaviors also have strong characterization in humans [116]. Dissociations between impulsivity and compulsivity also have been used to meaningfully differentiate clinical profiles, such as in hair-pulling [152].

Compulsivity has become a very popular term to refer to high-frequency sexual behaviors, although little research exists to clearly support differentiating sexual behaviors as compulsive. Cooper (1998) appears one of the first to use this term. His widely-cited “Triple-A Engine” (Accessibility, Affordability and Anonymity) is cited as driving VSS compulsions, especially to relieve negative affect by ‘positive reinforcement’ [124]. However, no one has directly tested whether compulsivity is a reasonable model for characterizing high-frequency VSS use.

Conclusions

VSS may have a number of links to positive health outcomes, especially through its connection to orgasm. For example, VSS could reduce sexual risk behaviors. In a longitudinal study, those who reported higher sexual sensation seeking engage in more risky sexual behaviors, and sexual sensation seeking is inversely related to VSS viewing [153]. One possibility is that those with higher sexual sensation seeking use VSS at younger ages and broaden the content of their VSS when sexual partners are not available to them to engage in actual sexual risk behaviors [154]. This is consistent with suggestions that masturbation, which almost always accompanies VSS viewing, could reduce risky partnered sexual behaviors [59]. The potential risk in labeling VSS as only addictive, and the role of VSS in regulating emotions as inherently problematic, misses opportunities to take advantage of the positive features of VSS (cp., cognitive retraining in gaming as in Bavelier and Davidson [155]).

Based upon the empirical data reviewed herein, the tenacity and popularity of the porn addiction concept to describe high rates of VSS use appears to be driven by non-empirical forces. Based upon this review, the authors suggest that this popularity reflects several factors. First, the concept of addiction itself is broadly used in the media to describe any high-frequency behavior that can be associated with problems for the individual or society. The lack of specificity makes the term nearly useless to scientists or clinicians. Secondly, the strong desire of most clinicians to be helpful to those in pain has been leveraged into a large, lucrative treatment industry benefitting from the perception that these behaviors are addictive and

require (paid) assistance to change. Finally, the ability to label VSS use as addictive appears to serve sociocultural functions. The label supports moralistic judgments, the stigmatization of sexual minorities, and the suppression of certain sexual expressions and behaviors. The concept of porn addiction is one mechanism to exert social control over sexuality as expressed or experienced through modern technological means. Mere conflict between a person's preferences and social standards should not be used to characterize pathology [156]. Moreover, this label may distract attention from the more likely causes of the negative consequences spuriously correlated with VSS use.

Individuals reporting 'addictive' use of VSS could be conceptualized using the approach outlined here. These individuals may be likely to be male, have a non-heterosexual orientation, have a high libido, tend towards sensation seeking, and have religious values that conflict with their sexual behaviors and desires. They may be using VSS as a means of coping with negative emotional states or decreased life satisfaction. When faced with such complaints, clinicians are encouraged to address these factors without conjuring addiction labels. As better models for high-frequency VSS use are tested, we may yet be able to spin fine cloth as an effective method for assisting these individuals without pathologizing them or their use of VSS.

Compliance with Ethics Guidelines

Conflict of Interest David Ley has received royalties from Rowman & Littlefield Publishers, is a paid blogger/writer for *Psychology Today*, and has had travel expenses covered by various media outlets for appearances on television shows.

Nicole Prause and Peter Finn declare that they have no conflict of interest.

Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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EXHIBIT 12

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Ordinary or Peculiar Men? Comparing the Customers of Prostitutes With a Nationally Representative Sample of Men

Martin A. Monto and Christine Milrod

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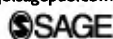
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Abstract

Recent media attention implies that prostitution seeking is widespread, an “ordinary” aspect of masculine sexual behavior. Other accounts suggest that customers are “peculiar,” characterized by distinct qualities, perversions, or psychological impairments. Using the nationally representative General Social Survey (GSS), this study demonstrates that prostitution seeking is relatively uncommon. Only about 14% of men in the United States report having ever paid for sex, and only 1% report having done so during the previous year. Furthermore, this study dissects whether customers are ordinary or peculiar by comparing a new sample of active customers who solicit sex on the Internet with an older sample of arrested customers, a sample of customers from the GSS, and a nationally representative sample of noncustomers. The customers of Internet sexual service providers differed greatly from men in general and also from other customers. The remaining samples of customers differed slightly from noncustomers in general. We argue for a balanced perspective that recognizes the significant variety among customers. There is no evidence of a peculiar quality that differentiates customers in general from men who have not paid for sex.

Keywords

prostitution, customers, sexual behavior

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Recent media attention implies that all forms of prostitution are growing and pervasive. According to a 2011 Newsweek article titled “The John Next Door,” “men who buy sex are your neighbors and colleagues.” The article further states that the “burgeoning demand for porn and prostitutes is warping personal relationships and endangering women and girls” (Bennetts, 2011, p. 60) and that “from 16 percent to 80 percent” of men pay for sex. An MSNBC broadcast repeated the claim, suggesting that “as much as 80% of men have paid for sex” (Jansing, 2011). While these estimates are periodically reiterated by more recent research (Farley et al., 2011), they have their roots in Kinsey, Pomeroy, and Martin’s 1948 study of male sexuality, which reported that 69% of men had visited a prostitute at least once in their lifetime. Unfortunately, the 12,000 cases from which Kinsey et al. drew their conclusions were gathered entirely through convenience sampling of colleagues and friends, and from places such as fraternities, attendees at sexuality lectures, and men in gay bars. Despite its large size, the sample is far from representative. Later research by Benjamin and Masters (1964) used Kinsey et al.’s numbers as well as their own nonrepresentative data to estimate that almost 80% of American men had visited prostitutes during their lifetime.

With such claims circulating through the popular media, it is important to take full advantage of existing data resources to better understand the incidence of prostitution seeking among men, and to evaluate whether there are significant differences between men who pay for sex and men who do not. One of the only studies appropriately designed to make such estimates is a monograph reporting the results of the nationally representative National Health and Social Life Survey conducted in 1992 (Michael, Gagnon, Laumann, & Kolata, 1994). The study, specifically designed to elicit information about sexual behaviors, indicated that about 16% of men in the United States had visited a prostitute at some point during their lives.

Prostitution is a contentious issue in the United States, with such exchanges illegal in all but a small number of jurisdictions. Although the level of attention it receives by law enforcement officials varies widely, both prostitutes and their customers are subject to arrest, with many communities providing diversion programs to reduce recidivism (Monto, 2004; Shively, Kliorys, Wheeler, & Hunt, 2012). One of the reasons for varying and largely inaccurate claims about customers may be a lack of information concerning this highly elusive population. The present study takes advantage of a new data set on customers of Internet sexual service providers (Milrod & Monto, 2012), an established public domain data set on arrested customers (Monto, 1999a, 1999b), and the nationally representative General Social Survey (GSS) (Smith, Marsden, & Hout, 1972-2010) to compare and describe men who pay for sex with men who do not. The GSS asks a question about whether respondents have ever paid for sex, thereby allowing us to estimate the percentage of men in the United States who pay for sex, as well as providing representative samples of customers and noncustomers. The present study compares background characteristics, attitudes, and behavior of these samples of customers with those of the nationally representative sample of noncustomers. Drawing conclusions based on these comparisons requires caution but also permits us to move beyond the baseless statistics and speculations that are sometimes present in the public dialogue about these issues.

Monto and McRee (2005) argue that much of the scholarly work on customers of prostitutes can be seen as taking either an “every man perspective” or a “peculiar man perspective.” In the former, prostitution is seen as a common, perhaps even inevitable, behavior among men. The phrase “the oldest profession” seems consistent with this orientation, implying that prostitution seeking is a normal aspect of male sexual behavior, that it has always existed, and that it will always exist. The popular media sources cited in the introduction to this article, with their high estimates and their imagery of customers as husbands, neighbors, and coworkers, can also be seen as consistent with this orientation. Prostitution scholarship in the feminist tradition also arrives at a version of an “every man” perspective, depicting customers not as marginalized individuals but as average, usually married men who, despite signs of outward conformity, act in a degrading manner that contributes to a system of patriarchy and oppression, and reinforces the dominant status of men (Farley, 2007; Månsson, 2005, 2006, 2008; O’Connell Davidson, 1998; Raymond, 2004). Throughout this article, we use the term *ordinary man* in place of *every man* to avoid confusing the issue of whether customers are distinct from noncustomers with the related question of whether prostitution seeking is widespread among American men.

According to Foucault (1978), scientific knowledge and social norms can work in conjunction to produce new subjects and identities that become identified as deviant, a process that when applied to sexuality can be termed the “psychiatrization of perverse pleasure” (p. 105). In prostitution more specifically, the exchange of money contributes to transforming what is intrinsically a biological act into a perversion, and those who participate into deviants. Seen this way, the customer becomes situated in an ideological context that defines him as peculiar rather than ordinary. The “peculiar man perspective” is reflected in an older body of research that has depicted customers as deviants with mental or moral deficiencies that have led to their behavior (Ellis, 1959; Glover, 1943). More recent research evaluating whether customers have distinguishable psychological traits has yielded mixed findings. Scandinavian and Dutch studies have pointed to characterological problems among customers, complete with classifications of personality types and possible interventions to reorient the peculiar client type toward more ordinary forms of sexual expression (Månsson & Linders, 1984; Sandell, Pettersson, Larsson, & Kuosmanen, 1996; Vanwesenbeeck, Graaf, Zessen, Straver, & Visser, 1993). Xantidis and McCabe (2000) have reported higher levels of sensation seeking among their sample of customers of brothel prostitutes in Australia, while Pitts, Smith, Grierson, O’Brien, and Misson (2004) found no significant differences between customers and their noncustomer sample on various demographic and behavioral measures.

Rubin (1984) argues that the tendency to pathologize certain behaviors and define them as peculiar reinforces the privilege of powerful groups and serves to “rationalize the well-being of the sexually privileged and the adversity of the sexual rabble” (p. 152). Contemporary society locates sexual behavior that is monogamous, procreative, noncommercial, and within marriage inside a “charmed circle,” while placing other sexual behaviors in what Rubin calls “the outer limits.” Our data lend insight into whether customers can reasonably be placed among the less privileged or the sexual rabble, and whether Rubin’s framework meaningfully applies to customers of prostitutes.

One of the leading public policy strategies for responding to the problems associated with prostitution has been to send offenders to diversionary educational programs or “john schools” to reduce recidivism (Monto, 1998; Shively et al., 2008). The orientation taken by these programs toward customers represents an amalgamation of the ordinary and peculiar man orientations. The schools rely on the assumption that most customers are not bent on violence against women and can be persuaded, through an appeal to conscience and a rational awareness of the consequences of future offenses, not to reoffend (Monto, 2004). This is consistent with the ordinary man perspective. However, some schools also include in their curricula components on anger management and sexual addiction—clinical issues that imply a peculiar man orientation (Shively et al., 2012). Interestingly, this strategy has the potential to influence customers’ perceptions of themselves; Wortley, Fischer, and Webster (2002) showed that among their 366 participants in john schools in Toronto, Canada, respondents were more likely to believe that they were addicted to sex after attending the deterrence program than prior to being arrested.

Although any sizable sample of customers (or noncustomers) would undoubtedly include some men with mental disorders, neuroses, or violent tendencies, published research has yielded little evidence of specific psychological problems or antisocial behavior among customers. For example, Monto and Hotaling (2001) found no evidence that arrested customers were more likely than men in general to harbor “rape myths,” that is, attitudes believed to be associated with violence against women. In comparing arrested customers and customers from the National Health and Social Life Survey and GSS with noncustomers, Monto and McRee (2005) found nothing that would indicate substantial peculiarity among men who paid for sex. Their research reported statistically significant but minor differences between customers and noncustomers. Customers were somewhat less likely to be married, less likely to be happily married, and generally less happy overall than men in the national samples. Customers were also more sexually liberal, thought about sex more, masturbated more, and participated in other facets of the sex industry more than noncustomers. These findings suggest that prostitution seeking among men may have more to do with situational and historical forces (Bullough & Bullough, 1987; Monto, 2010) than with the particular characteristics or pathologies of customers themselves.

Much of the existing research on customers of outdoor prostitutes focuses on occasional or inexperienced users. A number of first-offender studies are based on men arrested in sting operations while propositioning an outdoor police decoy (Monto, 1999a, 1999b). While gaining access to such an inaccessible population is valuable, the data may have overrepresented less experienced users. In fact, about 42% of the men in Monto’s sample reported that they had never before engaged sexually with a prostitute or that they had not paid for sex with a prostitute within the past year. Customers responding to the GSS may also have been less experienced users; while about 14% of respondents reported having paid for sex at some time during their lives, only about 1% had done so during the previous year. The present study contributes a sizable sample of highly active users or “hobbyists” who are part of an online

community of customers who locate prostitution services through prostitution reviews posted on www.theeroticreview.com.

The Erotic Review, often referred to as TER among its users, is ranked among the top 1,500 most visited websites in the United States (Alexa.com, n.d.). It reports having more than 1,000,000 registered members and receives between 250,000 and 300,000 unique visitors daily. A sizeable fraction of the reviewers, calling themselves hobbyists, participate under anonymous usernames on more than 50 discussion boards on the site. These men, though by no means a representative sample, provide a point of contrast and allow insight into a highly inaccessible population of active customers.

Method

Participants

Participants were drawn from the GSS ($n = 4,581$), Monto's (1999a, 1999b) public domain data set of arrested customers ($n = 1,817$), and from a convenience sample of men solicited on 43 of the discussion boards of the online prostitution review website TER ($n = 584$). All TER survey participants were provided with an informed consent statement as part of the questionnaire and were treated in accordance with the ethical principles and code of conduct required by the Institutional Review Board of the institution supporting the study (Milrod & Monto, 2012). Members of this sample of Internet hobbyists were registered users of the website. Registration for members is free and requires only a username and self-generated password, though some men choose to pay a small fee to access additional information on providers.

The sample of arrested customers completed anonymous questionnaires while they were gathered together immediately prior to educational workshops or so-called john schools designed to discourage them from reoffending. The return rate was more than 80%, with late arrivals, language barriers, and refusals accounting for the remainder. There were 1,169 respondents who attended Saturday workshops in San Francisco, California, called the First Offenders Prostitution Program (FOPP); 433 attended a similar program in Las Vegas; and 70 attended a weekend-long workshop in Portland, Oregon, administered by the now defunct Sexual Exploitation Education Project (SEEP). Data was gathered in San Francisco from 1995 to 1999, in Portland from 1995 to 1997, and in Las Vegas from 1997 to 1999.

The GSS, conducted by the National Opinion Research Center, uses a sampling frame designed to yield a nationally representative sample of *U.S. households*. Hence, it is not a perfect sample of men in particular. Data were drawn from the 2002 through 2010 samples. The weight variable COMPWT was used to adjust for the number of adults in the household and for other differences in household selection probability. The GSS includes questions about whether respondents ever had sex for pay in the last year and/or if they had ever paid for sex during their lifetime. The "ever had sex for pay" variable is simple; however, the "sex for pay in the last year" variable requires recoding. Respondents who did not answer the question because they had no

Table 1. Paid Sex Among a Nationally Representative Sample of Men.

	%	<i>n</i>
Had sex for pay in the last year		
By cohort		
1991-2000 samples	0.6	5,111
2002-2010 samples	1.0	4,581
By age group (2002-2010 only)		4,581
18-29	1.1	
30-39	0.6	
40-49	1.5	
50-59	0.7	
60-69	0.9	
70-75	0.5	
By military experience (2002-2010 only)		781
Served	1.4	
Did not serve	1.1	
Ever paid for sex		
By cohort		
1991-2000 samples	16.1	5,536
2002-2010 samples	13.9	4,552
By age group (2002-2010 only)		4,552
18-29	6.2	
30-39	10.2	
40-49	15.5	
50-59	19.4	
60-69	21.5	
70-75	23.2	
By military experience (2002-2010 only)		783
Served	23.3	
Did not serve	9.1	

sex partners during the previous year, or because they had only one sexual partner whom they described as their wife, girlfriend, or regular sexual partner, were coded as not having paid for sex during the previous year. As with other samples, we limited our GSS data to men aged between 18 and 75 at the time of the survey. Most of our analyses using the GSS are limited to the 2002 through 2010 survey years. However, Table 1, which provides information about the proportion of men in the general population who pay for sex, includes results from the 1991 through 2000 survey years for comparison.

The combination of original and secondary data has some limitations. In particular, the GSS is not designed specifically to explore the issue of prostitution in detail. Hence, we are limited in the variables available for comparison. This notwithstanding, the offender survey and the Internet hobbyist survey deliberately include questions

drawn from the GSS to allow for comparisons. In addition, an even larger proportion of questions included in the Internet hobbyist survey was taken with permission from the offender survey. The use of secondary data like the GSS means that researchers do not have the ability to ensure quality and consistency in sampling and administration. Nevertheless, the GSS is a widely used and respected national omnibus survey.

Variables

The comparisons provided in this article are limited to 13 items that were included in the customer survey and the national survey, and 15 additional items that were included in the offender survey and the Internet hobbyist survey. The wording and format of all items asked of the Internet hobbyists was taken from GSS and/or Monto's (1999a, 1999b) public domain data set, which uses some items derived from an attitudinal inventory developed by Sawyer, Rosser, and Schroeder (1998). Of the 13 items asked of respondents from the national and customer samples, demographic items included age, race, highest degree obtained, income (not asked of offender sample), labor force status, and marital status. Also compared are items related to sexual behavior, including number of sexual partners during the past year, frequency of sex during the past year, and gender of sexual partners during the past year. Four items measured sexual liberalism, asking respondents about the acceptability of sex before marriage, sex between teenagers, homosexual sex, and extramarital sex. An additional item used only in the GSS survey (national customers and noncustomers) asked whether the respondents had served in the military.

Of the 15 items asked only of the offender and Internet hobbyist samples, one asked whether any of their sexual partners was a wife or regular sexual partner; two related items asked how similar their sexual interests and levels of desire were with that regular partner. Two other items asked how often respondents thought about sex and how often thinking about sex made them feel guilty. A pair of items from a "rape myth acceptance scale" (Burt, 1980) asked whether women reporting rape did so "to get back at a man" or "to protect their reputation." There were four items that asked about customer experiences with prostitution, including the age at which they first patronized a prostitute, how often during the past year they had sex with a prostitute, their most common activity when with a prostitute, and how frequently they used condoms when with a prostitute. The remaining three items dealt with beliefs about prostitution, including whether prostitutes enjoy their work, whether prostitution should be legalized, and whether they could marry a prostitute.

Data Analysis

Simple comparisons of the response frequencies provide a relatively clear sense of the differences and similarities between groups. Because of the large sample sizes, chi-square tests reveal a great many significant differences between the various groups available for comparison on these tables, even when differences are quite small. The tables presented here use Cramer's V , a chi-square-based measure of the strength of

association between two nominal variables (Healy, 1990), which yields values ranging from 0, indicating *no relationship*, to 1, indicating a *perfect relationship*. Cramer's V is a symmetric measure, meaning its value does not vary depending on which variable is identified as independent. Chi-square tests of significance tests are not abandoned entirely, as tables indicate whether relationships between variables reached statistical significance based on Pearson's chi-square statistic. For clarity, however, we do not include the chi-square test statistics or degrees of freedom in the tables.

Results

Table 1 displays the percentages of men aged between 18 and 75 participating in the GSS who answered questions about whether they had *sex for pay in the last year* and whether they had *ever paid for sex* during their lifetime. Among men sampled between 2002 and 2010, about 13.9% reported having paid for sex during their lifetime, and about 1.0% reported having paid for sex during the previous year. Because the question is phrased so that one could answer "yes" whether he paid or received pay for sex, the actual percentage of men who pay for sex could be even smaller. In contrast, men sampled from 1991 to 2000 reported higher percentages during their lifetime (16.1%) but were less likely to have had sex for pay during the previous year (0.6%). These findings indicate that the percentage of men who pay for sex has declined over time in the United States. Older men were more likely than younger men to report having paid for sex during their lifetime, as they have had more years of adult sexual activity in which to have paid for sex. However, older men were less likely than younger men to report having paid for sex during the previous year. Men who reported having served in the military were slightly more likely than men who did not to report having paid for sex during the previous year and were much more likely to report having paid for sex at some point during their lifetime. The discrepancy in these numbers indicates that for these men, patronizing prostitutes was a behavior that took place while in a military context. This suggests that for occasional customers, prostitution use may be more a product of situation and availability than a product of basic personality features or psychological characteristics.

Table 2 provides comparisons between the various samples of customers and the nationally representative sample of men completing the GSS from 2002 to 2010. Consistent with Monto and McRae's study (2005) using the same data but with different GSS years, we find meaningful but small differences between the GSS noncustomers and the GSS customers. Because GSS customers are defined as men who have paid for sex at some point during their lifetimes, the substantial age differences between the GSS customers and noncustomers likely reflect the fact that older men have more potential years in which to have had sex with a prostitute rather than the tendency to solicit sex when older. Compared with noncustomers, GSS customers were somewhat less likely to be White, somewhat less likely to be working full-time, more likely to be unemployed, and slightly less likely to consider extramarital sex as wrong. National customers were slightly less likely to be married (a difference echoed among the offender sample) but also less likely to report never having been married.

Table 2. Comparison Between Customers, Noncustomers, Offenders, and Hobbyists.

	I: Noncustomers	II: National customers	III: Arrested offenders	IV: Internet hobbyists	Cramer's V
Age of respondent	<i>n</i> = 3,920	<i>n</i> = 632	<i>n</i> = 1,824	<i>n</i> = 583	I, II = .170***
18-29	27.4	11.2	25.5	3.1	I, III = .221***
30-39	20.3	14.2	33.9	17.0	I, IV = .230***
40-49	20.2	22.9	25.6	29.8	II, III = .416***
50-59	16.9	25.2	11.1	33.8	II, IV = .236***
60-69	11.3	19.1	3.2	14.8	III, IV = .406***
70-75	3.9	7.3	0.6	1.5	
Race of respondent	<i>n</i> = 3,904	<i>n</i> = 630	<i>n</i> = 1,796	<i>n</i> = 583	I, II = .086***
White	75.2	69.5	57.2	84.9	I, III = .271***
African American	9.6	16.7	6.3	3.3	I, IV = .160***
Hispanic/Latino	10.2	8.7	17.3	3.1	II, III = .256***
Asian/Pacific Islander	3.9	3.2	14.5	5.8	II, IV = .282***
Native American	0.9	1.6	1.4	0.5	III, IV = .256***
Other/combo	0.2	0.3	3.3	2.4	
Labor force status	<i>n</i> = 3,920	<i>n</i> = 632	<i>n</i> = 1,782	<i>n</i> = 583	I, II = .088***
Working full-time	64.1	60.3	81.2	62.4	I, III = .191***
Working part-time	8.6	8.1	5.2	12.0	I, IV = .214***
Temporarily not working	2.1	2.2	2.1	2.9	II, III = .279***
Unemployed	5.4	6.0	3.8	3.8	II, IV = .404***
Retired	9.7	16.1	2.8	1.0	III, IV = .333***
In school	5.1	1.9	2.0	17.8	
Keeping house	2.3	2.4	0.5	0.0	
Other	2.7	3.0	2.5	0.0	
Income of respondent	<i>n</i> = 2,851	<i>n</i> = 426	NA	<i>n</i> = 575	I, II = .069*
US\$1K-US\$19.9K	29.2	23.7		1.2	I, III = NA
US\$20K-US\$29.9K	14.7	11.3		1.0	I, IV = .572***
US\$30K-US\$44.9K	23.0	29.8		4.3	II, III = NA
US\$45K-US\$59.9K	12.1	13.1		8.7	II, IV = .674***
US\$60K-US\$89.9K	12.0	12.2		22.4	III, IV = NA
US\$90K-US\$119.9K	3.6	4.5		19.1	
US\$120K or more	5.3	5.4		43.1	
Highest degree	<i>n</i> = 3,921	<i>n</i> = 632	<i>n</i> = 1,817	<i>n</i> = 583	I, II = .024
Less than high school	12.6	12.0	9.8	0.0	I, III = .388***
High school	50.4	53.2	19.5	2.9	I, IV = .425***
Junior college	8.3	8.2	35.4	18.0	II, III = .363***
Bachelor	18.3	18.0	24.4	37.9	II, IV = .662***
Graduate	10.4	8.5	10.8	41.2	III, IV = .423***
Marital status	<i>n</i> = 3,921	<i>n</i> = 631	<i>n</i> = 647	<i>n</i> = 583	I, II = .112***
Married	55.8	51.8	41.0	62.4	I, III = .173***
Widowed	1.1	1.6	1.4	1.0	I, IV = .075***
Divorced	9.5	18.9	15.2	12.0	II, III = .135***
Separated	2.1	3.0	6.7	2.9	II, IV = .119**
Never married	31.5	24.7	35.7	21.6	III, IV = .189***
Attitude toward premarital sex	<i>n</i> = 2,029	<i>n</i> = 326	<i>n</i> = 1,582	<i>n</i> = 566	I, II = .024
Always wrong	19.5	16.9	10.2	0.7	I, III = .148***
Almost always wrong	6.3	6.7	5.3	1.2	I, IV = .296***
Sometimes wrong	18.4	18.4	15.9	8.8	II, III = .095**
Not wrong at all	55.7	58.0	68.6	89.2	II, IV = .400***
					III, IV = .220***

(continued)

Table 2. (continued)

	I: Noncustomers	II: National customers	III: Arrested offenders	IV: Internet hobbyists	Cramer's V
Attitude toward teen sex	n = 2,038	n = 334	n = 1,598	n = 529	I, II = .051
Always wrong	65.4	58.7	50.1	31.0	I, III = .175***
Almost always wrong	17.6	19.8	21.2	26.8	I, IV = .300***
Sometimes wrong	11.4	14.1	15.4	24.2	II, III = .079**
Not wrong at all	5.6	7.5	13.3	18.0	II, IV = .281***
					III, IV = .170***
Attitude toward extramarital sex	n = 2,080	n = 335	n = 1,627	n = 562	I, II = .099***
Always wrong	79.7	69.3	52.0	9.1	I, III = .296***
Almost always wrong	12.0	20.9	24.7	28.1	I, IV = .638***
Sometimes wrong	6.3	8.4	16.9	47.5	II, III = .146***
Not wrong at all	2.1	1.5	6.4	15.3	II, IV = .653***
					III, IV = .420***
Attitude toward homosexual sex	n = 2,036	n = 332	n = 1,444	n = 547	I, II = .041
Always wrong	54.6	49.4	48.9	6.4	I, III = .066**
Almost always wrong	4.5	3.9	6.4	3.8	I, IV = .406***
Sometimes wrong	7.8	9.3	9.6	16.8	II, III = .042
Not wrong at all	33.2	37.3	35.1	72.9	II, IV = .501***
					III, IV = .413***
Number of sex partners in the last year	n = 3,886	n = 629	n = 1,804	n = 582	I, II = .139***
None	13.1	15.7	9.0	0.2	I, III = .399***
1	70.4	58.8	37.4	4.0	I, IV = .765***
2	6.9	7.8	16.7	5.2	II, III = .249***
3	4.1	5.2	10.7	6.7	II, IV = .768***
4	2.3	3.7	7.3	11.0	III, IV = .547***
5-10	2.2	5.4	12.6	35.1	
11-20	0.8	1.6	4.0	25.3	
21 or more	0.1	1.7	2.3	12.7	
How often had sex in the last year	n = 3,788	n = 624	n = 1,722	n = 581	I, II = .054*
Not at all	12.8	14.4	8.8	0.3	I, III = .107***
Once or twice	9.2	10.4	9.5	8.8	I, IV = .207***
Once a month	11.1	13.8	15.4	24.1	II, III = .097**
2-3 times a month	17.4	17.1	22.5	27.0	II, IV = .312***
Weekly	19.1	19.2	18.4	21.0	III, IV = .187***
2-3 times a week	21.9	16.3	17.4	13.9	
4+ times a week	8.6	8.7	8.0	4.8	
Sex of sex partners in the last 5 years	n = 3,565	n = 583	n = 1,759	n = 583	I, II = .055**
Exclusively male	2.3	3.6	0.3	0.0	I, III = .158***
male and female	0.8	2.1	5.2	2.7	I, IV = .089***
Exclusively female	96.9	94.3	94.5	97.3	II, III = .146***
					II, IV = .137***
					III, IV = .058*

Note: Data in percentage.

* $p < .05$. ** $p < .01$. *** $p < .001$.

This latter finding is likely related to the older age of the national customers. About 70% of noncustomers had one sexual partner during the previous year. National customers were more likely than noncustomers to report having no partners during the last year but also more likely to report having multiple partners. Their frequency of sex during the previous year was quite similar. The remaining differences are exceedingly small and should not be treated as meaningful. The arrested offenders were less likely than the other groups to be non-White and more likely to be aged between 18 and 50. They were also more likely to be employed full-time, less likely to be married, and more likely to have achieved postsecondary education. They were more sexually liberal than the national groups on all items, but the differences were very small on the item regarding attitudes toward homosexuality.

Striking differences emerge when we compare the responses of the active hobbyists in the Internet sample with the noncustomers, national customers, and arrested offenders. Hobbyists were older and more likely than all other groups to be 50 to 59 years of age. They were more likely to be White (84.9%), more likely to report having completed an undergraduate (37.9%) or postgraduate degree (41.2%), and reported having significantly higher salaries than all other groups. While only about 20% of the other men reported salaries of US\$60,000 or above, more than 80% of the hobbyists did, with 43.1% reporting annual salaries above US\$120,000. Hobbyists were more likely to be married (62.4%), more sexually liberal, and reported having far more partners than all other groups. Interestingly, though they reported having more partners, they were less likely than men from the other samples to be among the men having sex four or more times per week. About 8.6% of GSS noncustomers, 8.7% of GSS customers, and 8.0% of offenders reported being in this highest category, compared with only 4.8% of hobbyists.

Table 3 provides comparisons between the arrested offender sample and the Internet hobbyist sample across 15 items asked only of these groups. Compared with the offender sample, the hobbyists reported thinking about sex more frequently, feeling less guilty about it, and having sex with prostitutes more frequently. Internet hobbyists reported that their most frequent activity with prostitutes was penile–vaginal sex (42.1%), followed by fellatio (34.8%). Among arrested offenders, 51.4% reported that fellatio was their most common activity with a prostitute, followed by “other” (commonly referring to “half and half,” that is, fellatio followed by penile–vaginal sex or manual masturbation) at 28.7%, and penile–vaginal sex (13.4%). Hobbyists were somewhat more likely than the offenders to report regular condom use, a difference that may be explained by the frequency of fellatio among arrested offenders. Internet hobbyists reported having their first experience with a prostitute at later ages than the arrested offenders.

Among men with wives or regular partners, Internet hobbyists were much more likely than arrested offenders to report that their sexual desires were stronger than their regular partners’ desires and that their sexual interests were different from those of their regular partners’. Although more than 95% of respondents in both groups responded that sex between adults and children was always or almost always wrong, 3.2% of Internet hobbyists responded that it is “wrong only sometimes,” or “not wrong

Table 3. Comparison Between Offenders and Hobbyists.

	Arrested offenders	Internet hobbyists	$\chi^2(df)$	Cramer's V
How often thinks about sex	<i>n</i> = 1,748	<i>n</i> = 583	425.58 (5)	.427***
Never	2.5	0.0		
Less than once a month	5.1	0.0		
One to a few times a month	11.7	0.0		
One to a few times a week	28.9	6.9		
Everyday	31.9	34.6		
Several times a day	19.9	58.5		
Feels guilty thinking about sex	<i>n</i> = 1,781	<i>n</i> = 583	47.73 (4)	.136***
Never	49.9	60.0		
Rarely	23.8	26.2		
Occasionally	19.5	11.7		
Often	4.8	1.9		
Nearly always	2.0	0.2		
One of sex partners was a regular partner	<i>n</i> = 1,554	<i>n</i> = 583	46.81 (1)	.148***
No	20.4	34.6		
Yes	79.6	65.4		
Similarity of sexual interests with partner	<i>n</i> = 1,184	<i>n</i> = 430		
Very similar	37.5	9.3		
Somewhat similar	38.3	30.0	240.67 (3)	.386***
Somewhat different	16.2	29.1		
Very different	7.9	31.6		
Similarity of sexual desire with partner	<i>n</i> = 1,212	<i>n</i> = 427	246.27 (4)	.388***
Partner much more interested	7.3	3.3		
Partner somewhat more interested	8.2	5.9		
About equally interested	40.5	14.8		
I am somewhat more interested	24.7	17.3		
I am much more interested	19.3	58.8		
Attitude toward sex between adults and children	<i>n</i> = 1,233	<i>n</i> = 583	25.36 (4)	.118***
Always wrong	95.8	91.3		
Almost always wrong	1.5	3.9		
Wrong only sometimes	0.4	1.5		
Not wrong at all	0.5	1.7		
Don't know	1.9	1.5		
Proportion of rapes reported to get back at man	<i>n</i> = 1,158	<i>n</i> = 583	127.30 (4)	.270***
Almost all	5.1	0.2		
About three fourth	7.4	0.2		
About half	15.5	5.5		
About one fourth	26.6	30.4		
Almost none	45.4	63.8		
Proportion of rapes reported to protect own reputation	<i>n</i> = 1,143	<i>n</i> = 583	107.36 (4)	.249***
Almost all	3.9	0.0		
About three fourth	5.7	0.2		
About half	13.2	3.9		
About one fourth	26.6	38.3		
Almost none	50.6	57.6		

(continued)

Table 3. (continued)

	Arrested offenders	Internet hobbyists	$\chi^2(df)$	Cramer's V
How often had sex with a prostitute during past year	<i>n</i> = 1,378	<i>n</i> = 575	368.88 (6)	.435***
Never	25.8	1.4		
Only one time	26.2	5.4		
More than once but less than once per month	34.6	66.4		
One to three times per month	10.5	24.5		
Once or twice per week	1.9	1.7		
Three or four times per week	0.4	0.5		
Five or more times per week	0.6	0.0		
Frequency of condom use with prostitutes	<i>n</i> = 1,341	<i>n</i> = 575	68.40 (4)	.189***
Never	4.2	0.9		
Seldom	3.2	1.6		
Sometimes	7.5	6.6		
Often	11.9	25.6		
Always	73.2	65.4		
Most common activity with prostitute	<i>n</i> = 1,281	<i>n</i> = 575	393.35 (5)	.460***
Vaginal sex	13.4	42.1		
Fellatio	51.4	34.8		
Hand job	5.6	3.5		
Anal sex	0.6	1.6		
Cunnilingus	0.2	11.1		
Other	28.7	7.0		
Age when first experience with prostitute	<i>n</i> = 1,116	<i>n</i> = 552	217.68 (5)	.361***
18-29	75.7	46.7		
30-39	18.2	23.2		
40-49	5.2	18.7		
50-59	0.7	9.8		
60-69	0.1	1.6		
70-79	0.1	0.0		
Would marry prostitute	<i>n</i> = 1,136	<i>n</i> = 565	237.72 (3)	.374***
Strongly agree	7.2	14.5		
Somewhat agree	16.5	38.6		
Somewhat disagree	21.7	30.3		
Strongly disagree	54.5	16.6		
Prostitutes enjoy their work	<i>n</i> = 1,104	<i>n</i> = 565	498.53 (3)	.547***
Strongly agree	4.3	3.4		
Somewhat agree	22.3	77.2		
Somewhat disagree	44.1	18.6		
Strongly disagree	29.3	0.9		
Prostitution should be legalized	<i>n</i> = 1,137	<i>n</i> = 565	223.79 (3)	.363***
Strongly agree	38.3	72.6		
Somewhat agree	32.5	24.2		
Somewhat disagree	11.9	2.5		
Strongly disagree	17.3	0.7		

Note: Data in percentage.

* $p < .05$. ** $p < .01$. *** $p < .001$.

at all” compared with 0.9% of arrested offenders. We hesitate to draw any conclusions about this minor difference, as the arrested offenders might have been more concerned about putting themselves in further legal jeopardy. Few men in either group reported attitudes consistent with rape myths. However, arrested customers were more likely than Internet hobbyists to harbor such beliefs, with 12.5% responding that “almost all” or “about three fourth” of women report rape to get back at a man and 9.6% responding that “almost all” or “about three fourth” of women report rape to protect their reputations. The Internet hobbyists’ attitudes toward prostitutes were significantly more positive than those of the arrested offenders. The belief that prostitutes enjoy their work was supported by more than 80% of the hobbyists, while more than 70% of the offender sample disagreed with this statement. More than half of the hobbyist sample “somewhat agreed” or “strongly agreed” that they would consider marrying a prostitute, whereas only one fifth of the offenders would do the same. Legalization of prostitution was supported by more than 95% of the hobbyists, while about two thirds of the offenders supported this measure.

Discussion

Simple findings from the GSS clearly demonstrate that prostitution seeking is not a conventional aspect of masculine sexual behavior. Only about 13.9% of men aged between 18 and 75, sampled between 2002 and 2010, reported having paid for sex during their lifetime and only about 1% reported having done so during the previous year. These findings clearly contradict the “john next door” notion perpetuated by the media and by groups interested in addressing the real and significant harm done by prostitution. It is noteworthy to recognize that 1% of adult men still results in a large number of customers. Nevertheless, it is also important that researchers move beyond the inaccurate and dated estimates based on Kinsey et al.’s (1948) study. There is no credible evidence to support the idea that hiring prostitutes is a common or conventional aspect of masculine sexual behavior among men in the United States.

In the introduction to this study, we identified two divergent perspectives toward the customers of prostitutes, the ordinary man perspective, which tends to normalize the customer or emphasize his similarities with other men, and the peculiar man perspective, which tends to depict customers as having various deficiencies or other unique qualities. Lowman and Atchison (2006) have identified similar divergences in social science accounts of customers. While we acknowledge that this way of framing the issue tends to imply an either/or approach to the problem, existing research has also lacked balance and tended toward oversimplification, overgeneralization, and a view of prostitution as a monolithic endeavor, ignoring the sometimes stark differences between street prostitution and indoor sex work (Weitzer, 2000). Different types of prostitution may also be associated with differences in the ethnicities and socioeconomic backgrounds of customers and providers, as well as their risk of arrest. In addition, differences in the contexts in which customers encounter prostitutes may affect the degree to which they are seen as peculiar, criminal, or pathological.

While prostitution seeking is relatively uncommon in the United States, arrested customers are not particularly unique or peculiar. Offenders are slightly less likely to be married, slightly more likely to be working full-time, slightly more sexually liberal, and slightly less likely to be White than are noncustomers. Their participation in prostitution is generally occasional, and many have little experience in seeking prostitutes. Customers are generally arrested in police operations in which a female officer serves as a decoy by posing as a street prostitute, and men offer her money for sex. More experienced customers are less likely to appear in a sample of offenders, as they are more likely to know providers and less likely to make errors in negotiation that could lead to arrest (Monto, 2004). Similarly, respondents in the GSS who reported having paid for sex are also not particularly unique or peculiar. The discrepancy between the percentage of men who have ever paid for sex (13.9%) and those who did so in the past year (1.0%) indicates that prostitution seeking does not necessarily become an established pattern of sexual behavior among men who have paid for sex. The fact that many of the men who had paid for sex had also served in the military further indicates that paying for sex may be more a product of situation and availability than behavior based on the peculiar qualities of the individual himself. Although there are statistically significant differences between customer and noncustomers, these differences are minor and do not support the idea that customers are peculiar men.

In contrast to the other two groups of customers, the sample of highly active customers, or hobbyists, does demonstrate that some groups of customers can differ substantially from men who do not pay for sex. The Internet hobbyists in our study were peculiar in their high incomes and high levels of education, but not in ways that suggest pathology or impairment. Their generally sexually liberal attitudes and their attitudes toward prostitution are consistent with their behavior as well. These men are part of an online community that endorses indoor prostitution as a legitimate form of sexual activity and enforces some boundaries about appropriate customer behavior from a moral standpoint (Milrod & Weitzer, 2012). Their overwhelming belief that prostitutes enjoy their work and their acceptance of prostitutes as potential marriage partners speak to a level of engagement that goes beyond satiating sexual desires. The discussion boards on the site offer contacts with providers who willingly participate and to some extent encourage interactions in which paid sexual experiences are seen as normal (Milrod & Weitzer, 2012). This helps the hobbyist reject the stigma of peculiarity attached to paying for sex. The customer adheres to a normative order in which "hobbying" is defined as compatible with a nonstigmatized identity (Goffman, 1963). In addition, the respondents' socioeconomic standard, education, and ability to pay fees up to US\$1,000 per hour for indoor sexual activity largely insulate them from attempts by law enforcement to interfere in their hobbying. Their exposure to arrest and diversionary practices such as john schools is minuscule.

Rubin's (1984) framework suggests that some sexual behavior exists within a "charmed circle" of approved behaviors and serves to reinforce and justify the privilege of powerful groups, while other sexual behaviors are marginalized. The contention that the social response to particular sexual behaviors reflects differences in power and may serve to marginalize certain groups is useful. However, our findings

concerning these different samples of customers complicate the picture. Although customers participate in nonprocreative, extramarital, and nonmonogamous sex, all of which are dimensions outside the charmed circle, their experience of risk and sanctions vary. Privileged men, such as our sample of Internet hobbyists, are not, in absence of occasional public scandal, marginalized or threatened due to their sexual behavior.

In contrast, customers associated with street prostitution are likely to have fewer financial and social resources; in fact, some have argued that specific ethnic segments of these men are explicitly targeted by law enforcement (Conroy, 2006; Preston & Brown-Hart, 2005; Van Brunschot, 2003). Monto (1999a, 1999b) argues that ethnicities of arrested customers generally tend to reflect the composition of the neighborhoods in which police stings take place. However, these operations tend to target areas characterized by street prostitution and occur in marginalized or transitional neighborhoods. These efforts contribute to the perception of the offender as “Other,” as criminal, or as having peculiar perversions or psychological impairments. The emphasis on rehabilitative measures such as teaching about “sex addiction” and “healthy relationships” in diversionary programs (Shively et al., 2012) further support the notion that customers of street prostitutes are endowed with some form of psychopathology that needs reorientation toward more accepted forms of sexual relations. The focus on treatment thus fails to separate paying for sex and being psychologically impaired. Our findings on the variables explored by this study reveal only minor differences between these customers and men who do not patronize prostitutes. It is important to note that the measures we had available do not thoroughly explore issues of psychopathology. Although we find it implausible, we cannot rule out the possibility that there are some peculiar qualities that differentiate these customers from noncustomers.

Recent efforts to reduce demand for prostitution should recognize the profound differences between different categories of customers. Although a full discussion of demand reduction strategies is beyond the scope of this article, it is worth noting that the diversion programs or john schools that are sometimes required of men arrested for trying to hire prostitutes disproportionately serve men who are less experienced in to seeking prostitutes—one of the reasons they are caught in the police sting operations (Monto, 2004). This may bode well for the success of these programs, as it is difficult to change a regular and established pattern of sexual behavior. In addition, men patronizing street prostitutes are involved in the segment of the industry that includes the most vulnerable women (Monto, 2004). Nevertheless, current demand reduction strategies leave largely untouched the most active and privileged customers.

Our research suggests a balanced perspective that recognizes the significant variety among customers. Most of the customers from our national sample have not patronized a prostitute within the past year. Although we know little else about their sexual behavior and history of prostitution seeking, this category of customers disproportionately includes men who served and may have learned about prostitution while in the military, and demonstrates that paying for sex need not necessarily become habitual or an aspect of the individual’s identity. The arrested offenders in our study also have qualities that differentiate them from other men more generally, such as being

disproportionately unmarried and younger. Nevertheless, data suggest that seeking prostitutes may not be an established sexual behavior for most of them, as few report regular experience with prostitutes. In contrast, the Internet hobbyists are open enthusiasts of prostitution, evidenced by their planning, negotiating, and discussing encounters online (Milrod & Weitzer, 2012; Sanders, 2008). Their example demonstrates that although seeking sexual experiences with prostitutes is relatively uncommon among men in the United States, there may be categories of customers that are more unusual and distinct, though not necessarily impaired or pathological. Future research should recognize and explore these and other categories of customers and describe how their networks and activities may be influenced by demographics, socioeconomic status, and other characteristics.

Authors' Note

Points of view in this document are those of the authors and do not necessarily represent the official position or policies of the U.S. Department of Justice.

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EXHIBIT 13

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Porn Sex Versus Real Sex: How Sexually Explicit Material Shapes Our Understanding of Sexual Anatomy, Physiology, and Behaviour

Cassandra Hesse¹ · Cory L. Pedersen¹

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Abstract Given that consumption of sexually explicit material (SEM) and sexual behaviour are inextricably linked, the purpose of this study was to determine whether the frequency of SEM consumption predicts knowledge of sexual human anatomy, physiology, and typically practiced sexual behaviour. A secondary purpose was to investigate self-perceived effects of SEM consumption and whether participants report SEM as a positive or negative contributor to various aspects of life. Using a modified version of the Pornography Consumption Questionnaire and the Falsification Anatomy Questionnaire, we determined that contrary to expectations, frequency of SEM exposure did not contribute to inaccurate knowledge of sexual anatomy, physiology, and behaviour. Rather, the opposite relationship was found. However, in concert with previous literature, participants reported greater positive self-perceived effects of SEM consumption than negative effects.

Keywords Pornography · Consumption · Anatomy · Sexual behaviour

Introduction

With advancing technology, and ease of accessibility, it is perhaps unsurprising that sexually explicit material (SEM) has become so ubiquitous today. In tandem with its increased presence arises a concern over its effects on young people, and despite numerous probes, the results of such explorations have largely generated inconsistent and conflicting findings (Lo and Wei 2005). Though current research reveals a striking association between SEM consumption and sexual attitudes and behaviours (Braun-Courville and Rojas 2008), the debate over SEM consumption

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and its relation to atypical sexuality and poor quality of life remains unresolved (Ybarra and Mitchell 2005). Young people are considered to be particularly at risk to the effects of SEM as a result of exposure to the messages contained therein during critical junctures of sexual development (Sinkovic et al. 2013).

With the Internet influencing nearly every aspect of the human experience, it is not surprising that the majority of SEM exposure and consumption occurs via the Internet (Haggstrom-Nordin et al. 2005, Stulhofer et al. 2010). Today, approximately 75% of households in North America have Internet access (U.S. Bureau of the Census 2009), with 93% of young people online and “sex” as the most frequently researched topic (Braun-Courville and Rojas 2008). The exponential growth of the Internet had led to a corresponding increase in the accessibility, anonymity, and convenience of SEM (Braithwaite et al. 2015). Exceeding 13 billion dollars in revenue in the U.S. alone (Ropelato 2007), it is estimated that world revenues of SEM now exceed 93 billion dollars. A recent study reported that about 28,000 people actively seek out SEM on the Internet every second, and over 244 million pages are operated within the United States (Doran 2009).

The proliferation of SEM on the Internet has led sexologists and developmentalists to question its impact on our understanding of human sexual anatomy, physiology, and behaviours. Interestingly, evidence indicates that adolescents and young adults have limited knowledge of foundational aspects of sexual reproduction, such as anatomy and physiology, despite 95% of youth between the ages of 13 and 18 years having been exposed to some form of sexual education (Ammerman et al. 1992). Likewise, Rashid and Jagger (1996) reported that the average 16- to 70-year-old citizen in the U.K. is uninformed about basic human anatomy, and Blum (1978) reported that female participants asked to draw several different familiar anatomical structures—such as the vagina, clitoris, uterus, fallopian tubes and ovaries—reproduced inadequate drawings and could not answer basic questions about anatomical form and function. Indeed, physicians are unable to confirm whether adolescents know what is meant when they discuss sexuality or use sexual vocabulary that is considered “basic” (Ammerman et al. 1992), and evidence indicates that while sexual education focuses on the health of anatomical structures, it fails to address accuracy of knowledge around the function of anatomy in sexual activity.

It is unclear why such widespread inadequate sexual knowledge remains (Trostle 2003), nor is it clear to what extent, if any, media such as SEM—that flaunts a bevy of misrepresentations of sex—is responsible for these misunderstandings. Given the ubiquitous and proliferating nature of SEM, it seems pertinent to question whether or not heightened exposure to such materials contributes to a similarly heightened distortion in people’s understanding of sexuality. That SEM is often criticized as perpetuating unrealistic sexual ideals, it seems likely that exposure would result in a shift in accurate sexual knowledge. For example, men who appear in SEM tend to have large penises (approximately 8–10 inches in length), relative to the average sized penis ranging between 4.6 and 6 inches in length. Moreover, women in SEM tend to exhibit above average sized breasts, and vulvas that appear relatively indistinguishable from one another (Lever et al. 2006). Could this gross exaggeration of male and female genitalia influence the perception of human

anatomy? Although SEM may not influence every person in the same way—and certain populations, such as developing adolescents—may be prone to uncritical interpretations of SEM, overall the effects of SEM on sexuality is determined by an intersection of demographic differences and sexual contexts (Hald et al. 2013a, b), which certainly may include frequency of exposure and previous sexual experience.

Theoretical Frameworks

There is considerable concern surrounding the growing accessibility of SEM and its impact on knowledge and sexual behaviours (Nathan 2007). Although this topic remains greatly understudied, theoretical concepts used to explore the influence of SEM (Braithwaite et al. 2015) suggest that the amount consumed, and the types viewed, are habitually associated with performance during intercourse and the development of sexual identity. Additionally, empirical evidence suggests that after viewing SEM, individuals tend to mimic the sexual practices illustrated in the media being consumed (Morgan 2011). Simply put—second to sexual stimulation—SEM conditions the sexual behaviours of its viewers. Researchers often explain such findings by referencing Cultivation Theory, which holds that repeated exposure to messages and images commonly portrayed in the media inspire and impact attitudes and beliefs (Gerbner et al. 1994). This theory coincides nicely with Gagnon and Simon's (1973, 1986, 2005) cognitively-based Sexual Scripts Theory, which proposes that as actors, our sexual encounters and behaviours are read from deeply ingrained sexual scripts informed by cultural, historical, social, and individual experiences. Both Cultivation and Sexual Scripts Theory reject the notion that sex is a biological construct driven by inherent desires. Rather, sexuality is socially constructed and greatly influenced by media, societal norms, and preexisting values and attitudes (Braithwaite et al. 2015). Similarly, the Media Practice Model (Brown 2000, Steele 1999, Ward 2003) and the Sexual Socialization Theory (Aubrey et al. 2003) further consider that people tend to actively seek out media that best reflects their sense of self and personal interests. That is, individuals seek out media they feel best reflects themselves, and in turn, that media guides the development of their sexual identity, both shaping it and changing it.

In light of both previous research and current models of sexuality, it has therefore been posited that repeated exposure to the explicit imagery, social messages, and normalized outlandish sexual performances found in SEM must certainly influence the perceptions, emotions, and behaviours of its viewers (Mulya and Hald 2014).

Inconsistencies Within the Literature

Traditionally, researchers have proposed that exposure to sexually explicit material significantly contributes to a variety of adverse effects such as permissive sexual attitudes, greater acceptance of premarital sex, and a tendency to see sex without love as more important than sex with love (Zillmann 1998). Further, opponents of SEM have determined that regular consumption is associated with greater engagement in high-risk sexual behaviours such as anal sex, a greater number of sexual partners, and a lowered age of first intercourse (Albright 2008, Braun-

Courville and Rojas 2008, Manning 2006, Morgan 2011) Some opponents have raised concerns that young people exposed to SEM during pivotal stages of sexual development may be susceptible to changes that alter their sexual behaviours and attitudes in harmful ways (Brown and L'Engle 2009, Peter and Valkenburg 2011) These negative sexual adaptations could potentially lead to complications, such as greater risks of acquiring sexually transmitted infections and the endorsement of permissive sexual norms (Luder et al. 2011) Wingwood et al. (2001) explored the sexual attitudes and behaviours of African-American women and found that those who had been exposed to X-rated sexually explicit recordings were more likely to hold negative attitudes toward the use of condoms, engage in higher-risk sexual behaviours—such as having a higher number of sexual partners—and test positive for chlamydia infection. Notably, it has also been suggested that prolonged exposure to SEM can lead to exaggerated beliefs about the ease of access to sexual activity, the frequency of sex among peers, and to heightened negative attitudes towards sexual partners (Braun-Courville and Rojas 2008) Indeed, some experimental studies examining insensitivity towards victims of sexual violence have found that exposure to violent SEM may be a contributing factor to men's aggressive behaviour against women (Donnerstein et al. 1987, Malamuth et al. 2000, Zillmann 1998, Zillmann and Bryant 1989)

In contrast, proponents of SEM refute such findings on the basis of methodological flaws and inherent bias. Rather, they argue that exposure to SEM plays a constructive role in various aspects of sexuality, and more often than not, has positive influences on sexual attitudes and behaviours (Stulhofer et al. 2010) Supporters postulate that exposure is *not* associated with sexual risk taking (Martyniuk et al. 2015), and that SEM enhances sexual knowledge, perceptions of sexual intercourse, and overall well-being (Hald and Malamuth 2008) Particularly, individuals report that exposure to SEM cultivates more positive affect towards sexual intercourse and one's sexuality, which result in an increased global quality of life assessment (Hald and Malamuth 2008) SEM has also been reported to successfully treat sexual dysfunction (Morokoff and Heiman 1980), aid in sexual and relationship satisfaction (Maddox et al. 2011, Manning 2006), reduce misogyny, aggression, and violence against women (Kohut et al. 2016, Martyniuk et al. 2015), increase excitement, and expand one's sexual repertoire by introducing novel ideas (Olmstead et al. 2012, Weinberg et al. 2010) Research has also shown that even within a culture of strict anti-SEM legislation, a sample of adults living in Indonesia reported beneficial and positive effects resulting from viewing SEM (Mulya and Hald 2014)

Focus of the Present Study

Given mixed findings regarding the influence of SEM on sexuality, and previous research suggesting widespread inaccuracies in sexual knowledge, the goal of the present study was to investigate whether SEM consumption contributes to inaccurate knowledge of human sexual anatomy, physiology, and typically practiced sexual behaviours. Specifically, this study examined whether predictors such as age, gender, perceived realism of SEM, frequency of consumption, and

sexual experience determine participants' level of sexual knowledge. This study is the first to investigate the presence of such a relationship and hinges upon the assumption that—should SEM influence sexuality to the extent that some research indicates—it should also influence knowledge of sexual anatomy, function, and behaviour. A secondary purpose of this study was to evaluate whether SEM exposure is perceived as having positive or negative effects on attitudes, behaviours, and general quality of life.

Given that *amount* of exposure to SEM may be critical in the influence it has on sexual attitudes and behaviours—with frequent consumers and those whose sexuality is not well established being especially vulnerable (Hald et al. 2013a, b, see also Brown and L'Engle 2009, Peter and Valkenburg 2011), several predictions regarding frequency of exposure were generated. First, it was hypothesized that frequency of SEM exposure would predict knowledge of sexual anatomy, with *greater exposure* resulting in *poorer knowledge*. Second, it was hypothesized that frequency of SEM exposure would predict knowledge of sexual physiology—what sexual intercourse commonly entails and how sexual bodies typically function—again, with frequent SEM exposure associated with less knowledge. Further, these relationships were anticipated to be linear; that is, participants who indicated the greatest consumption of SEM would report the poorest knowledge of anatomy and physiology.

Third, the variables of gender, age, perceived realism, and sexual experience were also hypothesized to predict anatomy and physiology knowledge. These predictors were selected given evidence identifying them as most relevant to knowledge attainment (Ammerman et al. 1992) and associated with SEM consumption (Hald 2006, Mulya and Hald 2014, Sinkovic et al. 2013)

Finally, it was hypothesized that all participants would report positive effects of their SEM consumption, further supporting the findings of previous research (Hald and Malamuth 2008, Hald and Mulya 2014, Hald et al. 2012)

Methodology

Participants

The sample was comprised of 337 participants (females; $n = 259$) recruited through several online forums (i.e., Facebook and Twitter) and via the research participant pool of a university located in a large Western Canadian city. As an incentive to recruit, student participants were eligible to receive course credit. The majority of the sample were heterosexual, female undergraduates, who had completed at least some undergraduate study (Table 1) Participants ranged in age from 15 to 58 years ($M = 23.00$; $SD = 6.35$).

Design and Procedure

Participants were directed via recruitment posters to complete a 20-min, anonymous, online survey (www.qualtrics.com) Following completion of basic

Table 1 Distribution of demographic characteristics by gender

	Males <i>n</i> = 78 <i>M</i> _{age} = 24.17 <i>SD</i> = 6.79	Females <i>n</i> = 259 <i>M</i> _{age} = 23.00 <i>SD</i> = 6.35
1. Sexual orientation		
(a) Straight	69 (88.5%)	228 (88.0%)
(b) Gay	7 (9.0%)	5 (1.9%)
(c) Bisexual	2 (2.6%)	26 (10.0%)
2. Education		
(a) Some high school	NA	2 (.8%)
(b) Completed high school	17 (21.8%)	19 (7.3%)
(c) Some undergraduate	52 (66.7%)	206 (79.5%)
(d) Completed undergraduate	8 (10.3%)	25 (9.7%)
(e) Graduate school or above	1 (1.3%)	7 (2.7%)
3. Relationship status		
(a) Not in a relationship	29 (37.2%)	91 (35.1%)
(b) Casually dating	18 (23.1%)	30 (11.6%)
(c) Committed relationship but not cohabitating	18 (23.1%)	92 (35.5%)
(d) Committed relationship and cohabitating	13 (16.7%)	44 (17.0%)
(e) Divorced	NA	2 (.08%)

demographics, validated measures of anatomy knowledge, frequency of SEM exposure, sexual experience, and perceptions of both the positive and negative aspects of SEM were presented to participants in equivalent order. This study employed a hierarchal multiple regression analysis, with age, gender, perceived realism of SEM, frequency of consumption, and sexual experience (i.e., frequency of intercourse and the number of vaginal, oral, and anal sexual partners) as predictor variables. A paired samples t- test was conducted to assess mean differences in positive and negative effects of SEM consumption by gender. Given that researchers exploring the influence of SEM often rely on interviews with participants—ultimately creating a “third person” effect (i.e., ascribing greater effects of SEM usage to others than to oneself) (Hald and Malamuth 2008)—we adopted an approach rarely used and often overlooked in SEM research; we examined self-perceived effects of SEM consumption using a comprehensive questionnaire.

Measures

Falsification Anatomy Questionnaire (FAQ; Hesse 2015)

The 17-item FAQ was designed for the current study and used to measure participants’ understanding of anatomical appearance and sexual acts commonly found in SEM. The FAQ utilizes a 4-point Likert scale to assess the degree to which

participants endorse various statements regarding sexually explicit form and function such as that observed in video footage of SEM. Scores range from 1 (*strongly disagree*) to 4 (*strongly agree*), with higher scores indicating better knowledge of sexual intercourse and male and female anatomy.

Questions on the FAQ include, “Most women entirely remove their pubic hair” and “Men usually last a long time while having sex”. Questions were selected for inclusion based on evidence of misconceptions between what constitutes “real sex” relative to “SEM sex”. For instance, “SEM sex” gives the impression that women can orgasm easily, quickly, and in any position. Evidence from “real sex” indicates that most women are unable to orgasm through vaginal penetration alone and often require various forms of stimulation or varied periods of time (Fugl-Meyer et al. 2006). As another example, SEM tends to provide viewers the impression that all women remove their pubic hair, though evidence indicates that the majority of women keep at least some of their pubic hair and total removal is much less common than that presented in SEM (Herbenick et al. 2010). We used the terms “most” and “usually” in several FAQ questions in order to provide respondents the opportunity to interpret variation relative to their own perspectives with regard to the frequency with which these events occur. The FAQ is included in Appendix 1.

Face and content validity of the FAQ was determined by having scale questions evaluated by a panel of eight human sexuality researchers, and by administering the FAQ to a sample of 32 respondents in a pilot study. Concurrent validity was assured by confirming that FAQ total scores positively correlated with demographic variables theoretically related to the scale, including education and age. In the present study, Cronbach’s alpha for the FAQ was established at .82, indicating very good internal consistency.

Modified Pornography Consumption Questionnaire (MPCQ)

For the current study, 63 questions were extracted from among the 139-item Pornography Consumption Questionnaire (PCQ; Hald 2006). Questions were selected from among the four PCQ subscales to assess participant exposure levels to SEM (e.g., “Age at first exposure”) and frequency of SEM use (e.g., “On average, how often have you watched pornographic materials during the last 6 months?”). To yield a better overall estimate of frequency of SEM consumption, and in accordance with procedures previously reported by Mulya and Hald (2014), indicators of consumption (frequency of consumption, duration of consumption) were collapsed into a SEM consumption composite measure, using the average standardized score of the indicators. Higher scores indicated greater frequency of SEM consumption.

Further, participants were asked to indicate the extent to which they believe that SEM consumption had effected them both positively and negatively in relation to five dimensions; sexual knowledge, attitudes towards sex, sexual behaviours, perception of and attitude toward the opposite gender, and overall life-quality. For instance, questions asked, “Has pornography been a positive supplement to your sex life?” and “has pornography given you performance anxiety when you are sexually active with others?” In accordance with scoring procedures provided by Hald

(2006), responses ranged from 1 (*not at all*) to 7 (*to an extremely large extent*), where higher scores indicated more positive and more negative self-perceived effects of SEM exposure, when collapsed into separate positive and negative composites. In the current study, internal consistency reliabilities for the positive effect and negative effect composites were computed $\alpha = .96$ and at $\alpha = .92$ respectively. The MPCQ, including the positive and negative effects scale, is attached in Appendix 2

For all intended purposes, the questionnaire provided participants with an operational definition of SEM, which stated “any material aimed at creating or enhancing sexual feelings or thoughts in the recipient and, at the same time (1) containing explicit exposure and/or descriptions of the genitals and (2) clear and explicit sexual acts, such as vaginal intercourse, anal intercourse, oral sex, masturbation, bondage, sadomasochism, rape, urine sex, animal sex etc. (Hald 2006) Participants were asked to refer to this definition throughout completion of the questionnaires and were informed that material such as Playboy/Playgirl—where nudity is present but sexual activity is absent—should be disregarded as SEM. Because research suggests that men use playboy/playgirl as a significant source of SEM—while women do not (Hald 2006)—providing a standardized, robust, operational definition of SEM controlled for potential confounds related to gender differences.

Demographic Information

Participants were asked to indicate their age, gender, sexual orientation, relationship status, and highest level of education. Gender differences in demographic information are presented in Table 1 Further, participants were asked to indicate the extent to which they believe that SEM portrayed a realistic or unrealistic depiction of sex, with responses ranging from 1 (*extremely realistic*) to 7 (*extremely unrealistic*). Higher scores indicated a greater endorsement for the perceived “unreality” of SEM.

Statistical Analyses

A hierarchal multiple regression analysis of predictors—with age, gender and perceived realism of SEM partialled out—was conducted to explore the contribution of both frequency of exposure to SEM and sexual experience to anatomical, physiological, and sexual behaviours knowledge. Assumptions of multicollinearity, homoscedasticity, independent error, and linearity were all met. Further, both Mahalanobis distance and Cook’s distance suggested no significant effect of outliers or influential cases. Missing values were treated with mean replacements before any statistical analyses were performed. Descriptive statistics for outcome and predictor variables, stratified by gender, are presented in Table 2

Table 2 Distribution of predictor and outcomes variables by gender

	Males <i>n</i> = 78 <i>M</i> _{age} = 24.17 <i>SD</i> = 6.79	Females <i>n</i> = 259 <i>M</i> _{age} = 23.00 <i>SD</i> = 6.35
1. Anatomy knowledge	2.97 (.43)	2.99 (.32)
2. Positive SEM	2.93 (1.08)	2.04 (.98)
3. Negative SEM	1.85 (.85)	1.51 (.65)
4. Frequency of intercourse	4.32 (2.89)	3.77 (2.94)
5. Number of oral partners	3.06 (3.07)	2.15 (2.66)
6. Number of anal partners	.86 (1.65)	.51 (1.08)
7. Number of vaginal partners	3.13 (3.33)	2.27 (2.92)
8. Time spent watching SEM ^a	4.85 (1.77)	2.39 (1.55)
9. Time spent watching SEM ^b	5.14 (17.74)	1.21 (2.98)

Standard deviations in parentheses

^a In the last 6 months

^b Hours per week

Results

Correlations and Multiple Regression Analysis

For our investigation of predictors of anatomy and sexual behaviours knowledge, both correlational analyses and hierarchal multiple regression analysis were employed. Results of the correlational analysis presented in Table 3 illustrate that several significant relationships were found. For instance, the SEM consumption composite and three of the four sexual experience items (number of vaginal, anal, and oral partners) were significantly positively correlated with the positive effects of SEM composite, suggesting that both frequency of exposure to pornography—and greater sexual experience—are related to overall increased sexual knowledge, overall improved life-quality, and more positive attitudes towards sex, sexual behaviours, and the opposite gender. Anatomy knowledge was significantly positively correlated with increasing age and education level, but unexpectedly negatively correlated with the positive SEM composite.

Interestingly, the SEM consumption composite was also significantly positively correlated to sexual orientation (where orientation was dummy coded at 1 = straight, 2 = bisexual, and 3 = gay, indicating increased consumption among gay participants, but negatively correlated with gender (where males = 1 and females = 2), suggesting—as expected—that males consume SEM with greater frequency than females. Significant negative correlations also suggest that males report greater numbers of oral, anal, and vaginal intercourse partners—a finding consistently reported in the literature (see Chandra et al. 2011)—and report both more positive and more negative self-perceived effects of SEM exposure, a finding similar to that relayed by previous researchers (Hald and Malamuth 2008, Johansson and Hammaren 2007, Mulya and Hald 2014)

In order to explore further the links among these variables, a hierarchal multiple regression analysis was conducted to assess the contribution of SEM consumption and sexual experience on participants’ understanding of anatomy, physiology, and

Table 3 Correlations among demographic, predictor, and SEM consumption variables

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Gender	-	-.08	.11	-.06	.06	-.47**	-.12*	-.12*	-.14*	-.08	.02	-.35*	-.20**
2. Age		-	.36**	.01	.27**	.08	.45**	.24**	.38**	.18**	.19**	.07	-.04
3. Education			-	.01	.21**	-.12*	.14**	.10	.13*	.13*	.13*	.01	-.05
4. Sexual orientation				-	-.01	.22**	-.03	.05	.04	.07	.11*	.12*	.01
5. Relationship status					-	-.04	.25**	.13**	.22**	.60**	.05	.04	.01
6. SEM Consumption Composite						-	.16**	.11	.17**	.05	.09	.53**	.08
7. Number of vaginal partners							-	.06**	.87**	.41**	.05	.11*	.02
8. Number of anal partners								-	.52**	.25**	-.05	.14*	.06
9. Number of oral partners									-	.42**	.06	.15**	.04
10. Frequency of intercourse										-	.10	.09	-.11
11. Anatomy knowledge (average)											-	-.16**	-.09
12. Positive SEM (average)												-	.23**
13. Negative SEM (average)													-

* $p < .05$; ** $p < .01$

typical sexual behaviours. To control for individual differences—and based on previous research—gender, age, and perceived realism of SEM were entered into the analysis as a block on the first step. The frequency of SEM exposure composite and sexual experience scores from the MPCQ were entered as a block on the second step. Table 4 presents the results of these analyses.

In the first step of the analysis, the combined influence of gender, age, and perceived realism accounted for 22% of the variance in anatomy and sexual behaviours knowledge, $F(3, 320) = 29.42, p < .001$. On the second step however, the model accounted for 26% of the total variance in anatomy and sexual behaviours knowledge, $F(8, 315) = 13.71, p < .001$. The unique contribution of the frequency of SEM consumption composite was the only statistically significant additional predictor ($R^2\Delta = .04, p = .001$), above and beyond those entered in the first step.

Paired Sample *T* Test

As shown in Table 5, a paired samples *t*-test indicates that both genders reported significantly greater positive ($M_{males} = 2.93, SD = 1.06; M_{females} = 2.02, SD = .97$) than negative ($M_{males} = 1.85, SD = .86; M_{females} = 1.51, SD = .65$) effects of SEM consumption on sexual knowledge, attitudes towards sex, sexual behaviours, perception of and attitude toward the opposite gender, and overall life-quality.

Table 4 Summary of hierarchal regression analysis for variables predicting anatomy knowledge

Predictor variables	β	Sig. <i>t</i>	<i>p</i>	95% confidence interval estimates	
				Lower	Upper
Step 1					
Gender	.041	1.01	.001*	−.04	.12
Age	.011	3.86	.000*	.01	.02
Realism	.088	8.67	.000*	.07	.11
Step 2					
Gender	.130	2.77	.001	.04	.22
Age	.013	4.09	.000	.01	.02
Realism	.093	9.07	.000	.07	.11
SEM consumption composite	.062	3.65	.000*	.03	.10
Number of vaginal partners	−.016	−1.33	.185	−.04	.01
Number of anal partners	−.018	−1.12	.264	−.05	.01
Number of oral partners	.011	.862	.389	−.01	.04
Frequency of intercourse	.006	1.02	.310	−.01	.02

Standardized coefficients reported. Step 1 = $F(3, 320) = 29.42, p < .001$; Step 2 = $F(8, 315) = 13.71, p < .001$

Table 5 Comparison of mean differences in positive and negative effects of SEM consumption by gender

	<i>MD_{Positive-negative}</i>		<i>t-test for paired samples</i>		95% confidence interval of the difference	
	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	Lower	Upper
Males	1.08	1.28	7.223*	73	.7825	1.3791
Females	.51	1.07	7.500*	245	.3777	.6469

* *p* < .001

Discussion

The purpose of this study was to expand on existing literature by exploring the role of SEM consumption to knowledge of sexual anatomy, physiological function, and typically practiced sexual behaviour. Our main goal was to determine whether frequency of SEM exposure would predict knowledge of sexual anatomy, physiology, and behaviour—a hypothesis based on the assumption that SEM provides unrealistic perceptions that could, with frequent exposure, result in inaccurate knowledge among viewers.

Contrary to this hypothesis, frequency of SEM exposure did not predict poorer knowledge. Rather, the opposite relationship was found. Specifically, frequency of SEM exposure predicted *more accurate* knowledge of anatomy, physiology, and sexual behaviour. Although this finding was unanticipated, it is possible that SEM is utilized as a tool for procuring sexual knowledge, to replace or supplement information acquired elsewhere. For example, research indicates that sexuality education courses focus mainly on female internal organs—such as the uterus, fallopian tubes, and ovaries—and on men’s uncontrollable erections (Orenstein 2015) Females are defined by their periods and males are characterized by their unstoppable sex drive (Orenstein 2015) These attempts at explaining human sexuality to young people—who are often left to interpret information as best as possible—do not address sexual exploration, sexual pleasure, self-knowledge, or the nuances of male and female anatomy. Seventy-five percent of students admit that their sexual education at school is “less than fair” and declare that issues pertinent to their sexuality are not covered in class (Young-Powell 2015) Indeed, a recent meta-ethnographic study covering 25 years of sexual education (Pound et al. 2016) reveals that young people report their sexual education as generally negative, gendered, and heterosexist—and indicate that it fails to discuss issues relevant to the lives of the sexually active. Perhaps then, young people use SEM in conjunction with their less-than-ideal educational programs and preexisting norms to grasp the vastly complicated concepts illustrated in SEM. Certainly, surveys indicate that 60% of respondents acquire sexual knowledge through watching SEM—despite 75% of them acknowledging that SEM conveys unrealistic expectations of sexual intercourse (Young-Powell 2015) Other studies suggest that, because conventional programs of sexual education are severely lacking, SEM and other forms of media

have come to serve as primary sources of sexual information acquisition (Brown and L'Engle 2009, Handelsman et al. 1987, Pound et al. 2016)

Another possibility for the finding that frequency of SEM exposure predicted greater sexual knowledge is that participants with significant preexisting sexual knowledge were more attracted to viewing SEM in the first place. Perhaps the opportunities, personality variables, or sexual liberalism that facilitated their acquisition of knowledge also contributed to their appreciation and propensity for watching SEM. Indeed, evidence does suggest that sexual openness and liberalism are associated with viewing sexually explicit internet sites (Barak et al. 1999), increased comfort with sexual issues (Fisher et al. 1988), and the seeking out of sexual information and knowledge (Fisher et al. 1988, Guerra et al. 2012, Kohut et al. 2016.) What may certainly be concluded from the unanticipated results of our study is that frequency of SEM consumption is just one variable, among several, that may influence sexual knowledge and attitudes (Hald et al. 2013a, b)

Aside from the variable of perceived realism that has previously been identified as a predictor of sexual beliefs and attitudes (see Mulya and Hald 2014)—only age and gender explained additional variance in sexual knowledge—that is, being female and being of older age. One possible explanation for this findings is evidence indicating that knowledge improves with age across multiple domains, and that females generally tend to score higher on measures of erotophilia, which is associated with greater sexual information seeking (Fisher et al. 1988, Rye et al. 2011) This explanation may account for why the effect of gender became more powerful in the second step of our hypothesized model. This gender effect is nonetheless consistent with other research in this area (see Hald et al. 2013a, b, Mulya and Hald 2014, Peter and Valkenburg 2011, Sinkovic et al. 2013), which finds that the additional explained variance of SEM-related variables on outcome variables is generally modest when relevant non-SEM variables have been controlled for. This suggests that anatomy knowledge may be more associated with factors other than SEM-related variables—and with gender in particular. We suggest that future researchers employ study designs and methodologies to further explore this possibility.

Contrary to our second hypothesis, sexual experience did not predict sexual knowledge. Our rationale for including sexual experience as a predictor of sexual knowledge was based on the simple premise that with more sexual experience comes more sexual knowledge. That is, with greater numbers of sexual opportunities and sexual partners, the imagery depicted in SEM become that much more obviously unrepresentative of typical activities and people. Thus, we are uncertain how exactly to interpret this finding, though we recall that several studies have found a significant gap in the average number of sexual partners reported by men and women (Clark et al. 2011, Phillis and Gromko 1985, Weiderman 1997). Evidence indicates that men grossly inflate their number of sexual encounters, perhaps in fear of being considered inexperienced, while women underreport their encounters in fear of presenting as promiscuous (Clark et al. 2011, Lottes 1993, Oliver and Hyde 1993, Wiederman 1997) Because our sample was comprised of predominately female participants—and because being female was a predictor of better knowledge—our results may reflect an under-reporting of true sexual

experiences on the part of our female participants and an over-reporting of false sexual experience by our (actually) less knowledgeable male participants. Our evidence suggests this may be the case, given that our male participants consistently reported more oral, anal, and vaginal partners, and more frequent sexual intercourse, than their female counterparts.

Finally, in support of our third hypothesis, participants did indeed report greater positive self-perceived effects of SEM than negative effects, as has been indicated in previous research (e.g., Braun-Courville, and Rojas 2008, Hald et al. 2012, Hald and Malamuth 2008, Mulya and Hald 2014). In general, both male and female participants reported greater positive aspects of SEM relative to negative with regard to its role in developing their sexual knowledge and repertoire of sexual behaviours, and improving their attitudes towards sex, the opposite gender, and their overall quality of life.

Limitations and Future Directions

Our data was collected from a non-random, self-selected, convenience sample of primarily undergraduate students in a large Western Canadian city, as well through snowball sampling via online forums. The sample was comprised of predominately heterosexual females and therefore, the results should be considered with caution due to concerns about generalizability (e.g., non-heterosexuals, non-students). That the sample was self-selected should especially invoke caution. Multiple studies indicate that self-selected human sexuality participants are significantly different from non-participants on several variables, including more positive attitudes toward both sex and SEM, more liberal political views, more sexual experience, and greater sexual permissiveness (see Morokoff 1986, Strassberg and Lowe 1995, Wolchik et al. 1985). It is therefore reasonable to expect this self-selected sample to differ from non-participants in their anatomy knowledge, further impacting the generalizability of the findings. Clearly, SEM researchers should focus their efforts on accessing more diverse and representative samples—particularly recruiting males—to address issues around self-selection and given that males consume significantly more SEM than females (Hald 2006, Sinkovic et al. 2013).

Secondly, the measures used to gauge sexual knowledge and SEM consumption relied on self-report. It is therefore possible that participants over- or underestimated their involvement in these behaviours due to the sensitive nature of the questions or social desirability bias (Tourangeau and Yan 2007). In addition, when conducting human sexuality research, participation bias is also of concern. People who participate in human sexuality research are more sexually liberal, open, and positive in regard to their own sexuality and sexual issues in general (Strassberg and Lowe 1995). Finally, it is worth noting that although our sample evaluated the effects of SEM to be more positive than negative, perhaps this is attributed to attention bias, where participant arousal and desire in response to the topic under study contributed to them focusing on the positive aspects of SEM (Hald and Malamuth 2008).

Despite these limitations, our results contribute to the extant literature on predictors that influence sexual knowledge, enhancing the ability to draw together

findings from among several studies, as conclusions from research in this area is highly contentious. Future researchers should include additional predictors to sexual knowledge in their analyses, such as with whom participants are watching, the types of SEM being watched (e.g., erotica versus hard-core SEM) (Hald et al. 2013a, b) and sources from where participants have generally received sexual information (i.e., parents, peers, professionals, media; see Bleakley et al. 2009, Handelsman et al. 1987, Somers and Gleason 2001)

Further investigations should also examine how cultural or religious beliefs influence sexual knowledge. For instance, Hald and Mulya (2014) examined positive and negative self-perceived effects of SEM consumption in an Indonesian population—where anti-porn laws remain active—to determine results similar to ours in that participants indicated more positive self-perceived effects of SEM. However, Hald and Mulya did not examine sexual knowledge specifically, so future investigators should incorporate religious or spiritual demographic questions in order to develop a more precise understanding of whether religion plays a role in the relationship between SEM exposure and sexual knowledge.

Finally, sexual orientation influences on sexual knowledge were not explored in this study, providing another avenue for future research. Although our sample was predominately straight, our results indicated a relationship between sexual orientation, sexual knowledge, and positive self-perceived effects of SEM consumption. That is, greater knowledge and more positive perceptions of SEM were both positively related to non-heterosexual identification. These results indicate that, while certainly SEM is accessed by heterosexuals, it may be more so by bisexuals and to an even greater degree, gay men and lesbian women. Clearly, more research is needed to disentangle the influence of sexual orientation on frequency of SEM consumption and sexual knowledge.

This study was, to our knowledge, the first to explore knowledge of sexual anatomy, physiology, and sexual behaviours in relation to frequency of SEM consumption. It was established that frequency of SEM consumption plays a significant role in our understanding of anatomy, physiology, and sexual behaviours, but that sexual experience (frequency of sexual intercourse and number of sexual partners) does not. However, the confluence of several factors such as age, gender, perceived realism, and SEM consumption levels have strong predictive validity and social relevance. These results suggest the need for sexual health educators to incorporate a SEM component into preexisting programs to better focus on issues that directly relate to sexual exploration and to lean away from only teaching about pregnancy prevention and male erections (Orenstien 2015). Sexual health educators need to tailor their programs to focus more on activities, behaviours, and actions typical of sexual intercourse so people are not only aware of the realities of sexual intercourse, but are confident in their sexual exploration with themselves and their partners. The current study extends the knowledge of SEM consumption, and from this we can conclude that SEM does play a role in sexual discoveries. By revamping the efficacy of existing programs or initiating the development of new programs aimed at adolescents and young adults, we can better inform about the ideals and attitudes proliferated by SEM. Not only will this enhance the ongoing scientific debate about the effects of SEM consumption, it will provide evidence for the

necessity of a sexually explicit material component to the sexual education programs of school curriculum.

Appendix 1: FAQ Questionnaire (Hesse 2015)

Please indicate the extent to which you disagree or agree with each statement below. Remember, we are only interested in your thoughts and opinions.

1. The average breast is cup size D	Strongly agree (1)	Agree (2)	Disagree (3)	Strongly disagree (4)
2. The average penis is 7 inches in length	Strongly agree (1)	Agree (2)	Disagree (3)	Strongly disagree (4)
3. Women orgasm every time they have vaginal sex	Strongly agree (1)	Agree (2)	Disagree (3)	Strongly disagree (4)
4. Most women remove their pubic hair entirely	Strongly agree (1)	Agree (2)	Disagree (3)	Strongly disagree (4)
5. Women's vaginas look relatively the same	Strongly agree (1)	Agree (2)	Disagree (3)	Strongly disagree (4)
6. Most women are easily aroused and ready for sex immediately	Strongly agree (1)	Agree (2)	Disagree (3)	Strongly disagree (4)
7. Men do not generally last long while having sex	Strongly agree (1)	Agree (2)	Disagree (3)	Strongly disagree (4)
8. Most women routinely engage in same-gender sexual behavior (e.g., girl-on-girl)	Strongly agree (1)	Agree (2)	Disagree (3)	Strongly disagree (4)
9. Most women enjoy swallowing semen	Strongly agree (1)	Agree (2)	Disagree (3)	Strongly disagree (4)
10. Sexual intercourse usually involves anal sex	Strongly agree (1)	Agree (2)	Disagree (3)	Strongly disagree (4)
11. It is common for sex to involve more than two people (e.g., threesomes)	Strongly agree (1)	Agree (2)	Disagree (3)	Strongly disagree (4)

Appendix 2: Modified Porn Consumption Questionnaire (MPCQ; Hald 2006)

This questionnaire contains questions about pornography and sexuality. The questionnaire is part of a research project which has been approved by both The Danish National Committee on Biomedical Research Ethics and the Danish Data Protection Agency.

Although the questions may sometimes seem very personal, please answer as honestly as possible. Please remember that you will never be held responsible for your answers or confronted with them again. In other words, your answers are 100% confidential and will be used for research only.

The following definition should be referred to whenever the term “pornography” is used in the following questions. Pornography refers to any kind of material that has:

- 1. The intention of creating or increasing sexual emotions or sexual thoughts and at the same time contains
 - 2. Exposure or descriptions of sexual organs and involves
 - 3. Clear and obvious sexual acts (e.g., vaginal sex, oral sex, anal sex, masturbation, etc.)
- Materials such as pinup girls, Playboy/Playgirl, various ads, etc. do not contain: “clear and obvious sexual acts” and are therefore NOT considered pornography.

1. Have you ever been exposed to pornography	Yes	No
2. Has your exposure to pornography been during the past 12 months?	Yes	No
3. Has your exposure to pornography been during the past 6 months?	Yes	No
4. Has your exposure to pornography been during the past month?	Yes	No
5. Has your exposure to pornography been during the past week?	Yes	No
6. Has your exposure to pornography been during the past 48 h?	Yes	No
7. Has your exposure to pornography been during the past 24 h?	Yes	No

- 8. Age at first exposure (approximately)? (years)
- 9. On average, how much time *per week* have you spent watching some kind of pornography over the last 6 months? Per week: _____hours and _____minutes
- 10. On average, how often have you watched pornographic materials during the last 6 months?

Never	Less than once a month	1–2 times a month	1–2 times a week	3–5 times a week	More than 5 times a week
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11. How many different people have you had vaginal intercourse with?

None	1–2	3–4	5–6	7–8	9–10	11–12	13–14	15–16	17–18	19–20	21 or more
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12. How many different people have you had anal intercourse with?

None	1–2	3–4	5–6	7–8	9–10	11–12	13–14	15–16	17–18	19–20	21 or more
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13. How many different people have you had Oral Sex with?

None	1–2	3–4	5–6	7–8	9–10	11–12	13–14	15–16	17–18	19–20	21 or more
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14. How often do you masturbate?

Do not masturbate	Once every 6 months or less	Once every third month	Once every second month	Once a month	Twice a month	Once a week	2–3 times a week	4–5 times a week	Once a day or more
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15. How often, approximately, do you have sex, including intercourse?

Have not had sex including inter-course	Once every 6 months or less	Once every third month	Once every second month	Once a month	Twice a month	Once a week	2–3 times a week	4–5 times a week	Once a day or more
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Below is a series of questions. Please indicate your answer to each question using the following scale:

1	2	3	4	5	6	7
Not at all	To a very small extent	To a small extent	To a moderate extent	To a large extent	To a very large extent	To an extremely large extent

1. Has taught you new sexual techniques?
2. Has made you less tolerant towards sex?
3. Has influenced positively your outlook on sex?
4. Has adversely affected your views of the opposite gender?
5. Overall, has had a harmful effect on your life?
6. Overall, has been a negative supplement to your sex life?
7. Has led you to view the opposite gender more stereotypically?
8. Has added to your knowledge of vaginal sexual intercourse?
9. Has taught you something new about your sexual desires?
10. Has made you less satisfied with your life?
11. Overall, has made a valuable contribution to your life?
12. Overall, has improved your sex life?
13. Has reduced your sexual activities?
14. Has added to your knowledge of anal sex?
15. Has positively affected your view of the opposite gender?
16. Has added to your knowledge of sexual foreplay?
17. Has made your life more problematic?
18. Has made you more tolerant in relation to sex?
19. Has made you less sexually liberal?
20. Has made you more respectful towards the opposite gender?
21. Has made you experiment more in your sex life?
22. Overall, has made your sex life worse?
23. Has added to your knowledge of masturbation?
24. Has made you more content with your life?
25. Has reduced your quality of life?
26. Has had a negative influence on your attitudes toward sex?
27. Has increased your sexual activity?
28. Overall, has been a positive supplement to your sex life?
29. Has improved your knowledge of sex?
30. Has improved your quality of life?
31. Has had a positive influence on your attitudes toward sex?
32. Has adversely affected your outlook on sex?
33. Has added something positive to your sex life?
34. Has made you experiment less in your sex life?
35. Has made you less respectful towards the opposite gender?
36. Has made you friendlier towards the opposite gender?
37. Has adversely influenced your opinions of sex?
38. Has led you to view the opposite gender less stereotypically?
39. Has improved your knowledge of oral sex?
40. Has led to problems in your sex life?
41. Has given you more insight into your sexual fantasies?
42. Has made your life less problematic?
43. Has positively influenced your opinions of sex?
44. Has added something negative to your sex life?
45. Has made you more sexually liberal?

46. Generally, has given you performance anxiety when you are sexually active on your own (e.g., during masturbation)?
47. Generally, has given you performance anxiety when you are sexually active with others (e.g., during intercourse, oral sex, etc.)?

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The positive and negative effects of pornography as attributed by consumers

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Abstract

Little research has been conducted asking what range of effects pornography might have on consumers. In the literature it has been assumed that the primary effect will be to create negative attitudes towards women, but this assumption has not been tested. No experimental research has been done on what possible positive effects the consumption of pornography might produce. As a preliminary step in such a project, a survey of 1023 consumers of pornography in Australia asked consumers to specify whether they felt that pornography had had any effect on their attitudes towards sexuality, and to specify that effect. 58.8% of respondents thought pornography had had a very positive or a positive effect on their attitudes towards sexuality; 34.6% felt it had had no effect; and 6.8% thought it had a negative effect or a large negative effect. The main positive effects, in order of reporting, were: making consumers less repressed about sex; making them more open-minded about sex; increasing tolerance of other people's sexualities; giving pleasure to consumers; providing educational insights; sustaining sexual interest in long-term relationships; making consumers more attentive to a partner's sexual desires; helping consumers find an identity or community; and helping them to talk to their partners about sex. The most common negative effects were that pornography led consumers to objectify people; caused them to have unrealistic sexual expectations; caused relationship problems; caused loss of interest in sex; and led to addiction. Now that these possible positive and negative effects have been identified, further research can be conducted to investigate the extent of these effects for consumers of pornography.

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Introduction

There exists an extensive literature investigating the possible effects on consumers of exposure to pornography. However, most of this literature starts from the assumption that the major effect of such exposure will be the creation of negative attitudes towards women (for an extensive discussion of this literature, see McKee, 2005a, McKee, 2005b). It is difficult to find experimental research that starts by attempting to map the possible effects that pornography may have on consumer. There is a small amount of speculative work which suggests that possible positive effects might include providing the materials for identity formation for marginalized sexual communities such as gay men and lesbians (Flood & Hamilton, 2003, p. 24); challenging restrictive gender roles (Duggan, Hunter & Vance, 1988, p. 82); or therapeutic benefits such as overcoming shame about sex (Winick, 1984, p.209; Kimmel, 1990, MacDonald, 1990). There exists no experimental literature on these possible benefits.

This article presents the results of a survey of 1023 consumers of pornography in Australia. This is part of the 'Understanding Pornography in Australia' research project funded by the Australian Research Council. Two forms of data gathering were used to gather information about consumers of pornography in Australia. The first was the survey. The second was detailed interviews with forty six consumers of pornography (see McKee, 2006).

The survey provided a variety of useful data, including evidence that age, voting intention and religion are more reliable predictors of negative attitudes towards women than pornography consumption. This has been reported elsewhere (McKee, 2007). This article reports on information provided by the survey on the range of possible positive and negative effects resulting from exposure to pornography. This has not previously been published.

Method

The method involved in the survey has been described in detail elsewhere (McKee, 2007), and will be summarised here. The survey was administered both as a hard copy enclosed in a mail order pornographic catalogue and as an online instrument, publicised in the media and online. 5000 paper copies of the survey were sent out and 367 valid responses were received — a 7.3% response rate. This is a low response rate, perhaps explained by the fact that, although pornography is legal in Australia, public debate still tends to brand its users as perverse if not criminal (see, for example, Hamilton, 2004). 656 valid responses were

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received from the Internet (after they had been checked for duplicate responses, completeness, internal consistency, and multiple responses from single IP addresses), for a total of 1023 responses from consumers of pornography.

The survey instrument consisted of forty one questions, refined after a small pilot project was run in April 2003. It included ten questions asking for basic demographic data (1-8, 33-34), three questions about sociability (9-11), four questions about general cultural consumption (12-15), seventeen questions about use of and thoughts about pornography (16-32) and seven questions about attitudes towards women (35-41) (see Appendix 1).

The questions about the use of and thoughts about pornography included a mixture of open and closed questions. The results reported in this article were generated in response to question 32. The question asked ‘What effects has pornography had on your attitudes towards sexuality?’, and offered a five point Likert scale: ‘A large negative effect’; ‘A small negative effect’; ‘No effect at all’; ‘A small positive effect’ or ‘A large positive effect’. In any case where respondents identified an effect — positive or negative — they were also asked to ‘Provide brief details’, and a box was provided for open answers. The details that were provided in the open section were coded by the author. A taxonomy was developed by reading through all the answers. The author then went through all the responses again and counted the answers in each category, as far as possible using keywords for consistency (see below), but also employing common sense when it was clear that an answer should fit into a given category even if it did not use a keyword.

Asking consumers of pornography for their insights into the genre is still, surprisingly, a contentious methodology — although self-reporting is an increasingly common methodology for analysing the effects of pornography on its consumers as long as researchers are aware of the limitations of the approach (see, for example, Padgett, Brislin-Slutz & Neal, 1989; Potter, 1996, p. 82; Richters, Grulich, de Visser, Smith, & Rissel, 2003, p. 181). Several Australian commentators have suggested that consumers of pornography are unreliable sources of information as they are likely to lack self-insight, be criminal, immoral, or mentally ill (either deluded or addicted) (Trad 2004, Gilding, 2004, Castles, 2006). However, this is unlikely as there exists no evidence that, as a population, consumers of pornography are any less reliable than any other survey population.

It must also be borne in mind that this is a self-selecting sample. It is therefore likely that the negative effects of pornography are over-reported in this survey, and that the real percentage of consumers experiencing a negative effect is smaller. As Bright has noted, ‘it’s a lot easier being critical with porn’ than to publicly admit enjoyment (cited in O’Toole, 1998, p. 338). And, indeed, this is generally the case with research into the media, as those consumers who

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are disgruntled and unhappy with the media tend to be overrepresented in self-selecting samples. People are less motivated to make the effort to report that they are happy with a media product. Beyond this, there is an experimenter demand in effect in researching popular culture where audiences, aware of its low status, tend to denigrate even those things they enjoy, in order to demonstrate to academic researchers that they are not cultural dupes (Seiter, 1990).

Results and discussion

Basic demographic data from the survey has been reported elsewhere (McKee, 2007).

In response to the question ‘What effects has pornography had on your attitudes towards sexuality?’, consumers gave the following responses:

Table 1: Effects of pornography

		Frequency	Percent
Valid	Large neg effect	11	1.1
	Small neg effect	58	5.7
	No effect	354	34.6
	Small pos effect	320	31.3
	Large pos effect	261	25.5
	Total	1004	98.1
Missing	No answer	9	.9
	Uncodable	10	1.0
	Total	19	1.9
Total		1023	100.0

As can be seen, far more respondents (a total of 58.8%) felt pornography had had a positive effect than those who thought it had a negative effect (a total of 6.8%).

This in itself is a surprising result, as it is difficult to find any serious academic research that has investigated the possible positive effects of exposure to pornography. The result accords with O’Toole’s journalistic work. He analysed letters and emails from almost two hundred consumers and found that: ‘most people [who use pornography] seem to find their time with porn pleasurable rather than sad, demeaning, addictive or harmful’ (O’Toole, 1998, p. xi). As noted above, previous writers have speculated about some possible positive effects, but have not explored these. The only possible effect that has been investigated specifically within the experimental (as opposed to survey) literature is the negative effect of creating negative

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attitudes towards women. This fact alone suggests that this survey may be useful — it does, at least, point us towards an exciting new avenue for research. If, indeed, it is possible that there are positive effects resulting from the exposure to pornography, then it is vital that researchers begin to investigate these.

What might these effects be?

In asking respondents to describe the effect that pornography had on their sexuality we left the question open, allowing them to define this for themselves. From this, we can provide a list of the most commonly cited effects of pornography, both positive and negative.

It seems reasonable to list the potential positive effects first, given that substantially more consumers mentioned positive than negative effects. In analysing the responses to the open question, a number of common ideas, marked by recurring words, emerged. By far the most common positive effect described was becoming less repressed and more comfortable about sex (141 respondents, 13.8% of all respondents). Key recurring terms were ‘relaxed’, less ‘inhibited’, and more ‘open’. 99 respondents (9.7%) said that pornography had made them more open minded and willing to experiment sexually (key terms were ‘open-minded’ and ‘adventurous’). 68 people (6.6%) said that pornography had made them more ‘tolerant’ (a common word) of other people’s sexual pleasures — commonly with the caveat that this was true ‘so long as no-one gets hurt’. 65 (6.4%) mentioned the arousal and pleasure they got from pornography personally (common words were ‘arousal’ and ‘stimulation’). 57 (5.6%) used terms like ‘education’ and ‘learning’, talking about basic information, such as how bodies worked, as well as techniques and ideas. 47 respondents (4.6%) talked about using pornography to maintain interest in sex within a long term relationship (using terms such as ‘spicing up’ and ‘variety’). 29 respondents (2.8%) responded that pornography had made them more attentive to their partner’s pleasure in sex. 24 (2.3%) stated that it had helped them find an identity or community (using language such as finding out that they were ‘not alone’). 21 (2.1%) said it had helped them to open discussions with their partner about sex.

These results can be compared with the results of Winick’s research, where he suggests that the readers of pornography might be ‘obtaining information, exercising fantasies, obtaining reassurance, collecting and comparing materials, seeking stimulation and obtaining guidance in overcoming sexual difficulties’ (Winick, 1985, p. 209).

In reporting the negative effects, it is worth noting the small numbers involved. Even the most unusual positive effect was reported by more people than the most common negative effect. The most common negative effect, mentioned by 18 people (1.8%) was that pornography led to them to objectify people (key terms ‘objects’ or ‘objectify’). 16 people (1.6%) responded that porn caused them to have ‘unrealistic’ expectations, both about themselves and other

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people's bodies and pleasures. 5 people (0.5%) said that pornography had caused problems in a relationship, 4 people (0.4%) found it had led to a loss of interest in real sexual contact, and 4 others had problems with addiction to pornography.

Conclusion

This data has important implications for future research into the effects of pornography. It is vital that we do not take the responses from the surveys on face value, but that we begin to research their validity. It is bad science to start from the assumption that there is only one possible effect of exposure to pornography without asking as a first step what range of effects in fact might be produced.

We now have an extensive experimental literature examining one possible effect of such exposure — the possibility of creating negative attitudes towards women. But according to consumers of pornography themselves, this is one of the least likely effects of exposure (1.8%). They report, as more likely effects, becoming less repressed about sex, becoming more open-minded about sex, becoming more tolerant of other people's sexualities, giving them pleasure, providing sexual education, maintaining sexual interest in long term relationships, being more attentive to a partner's sexual pleasure, finding an identity or community, and making it possible to open discussions with their partners about sex. All of these effects were reported more commonly than the creation of objectifying attitudes. It seems only reasonable that research into the effects of pornography should be broadened in order to see whether it is possible to replicate these effects experimentally. It may indeed be that future research finds it impossible to create such effects, but it behoves us as social scientists to find out whether this is the case.

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Appendix 1**Survey instrument.**

	Male
	Female
	Other (please specify)
1. How old are you?	BOX
Under 18	
19-25	6. With which sexuality do you most identify?
26-35	
36-45	Straight
46-55	Gay/lesbian
56-65	Bisexual
66+	Celibate
	BDSM
2. What is your annual income before tax?	Other (please specify)
	BOX
Under \$12,000	
\$12,001-\$20,000	7. In which area do you live?
\$20,001-\$30,000	City, urban
\$30,001-\$40,000	City, suburban
\$40,001-\$60,000	Town
\$60,001-\$80,000	Small town
\$80,001-\$100,000	Rural
\$100,001+	Remote
	Other (please describe)
3. How would you describe your own ethnicity?	BOX
BOX	8. In which state or territory do you live?
	ACT
4. At what stage did you complete your formal education?	NSW
	NT
Still studying	QLD
Primary	SA
Secondary	TAS
Tertiary (including TAFE and university)	VIC
Postgraduate	WA
5. Which sex are you?	

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- | | |
|---|--|
| <p>9. When you have guests in your home
are they mostly:</p> <p>Family</p> <p>Friends</p> <p>Work colleagues</p> <p>I don't entertain people in my home</p> | <p>Imparja</p> <p>Fox 8</p> <p>Fox Sports (including Fox Sports Two and
Fox Footy)</p> <p>Other (please specify)</p> <p>BOX</p> |
| <p>10. How often do you go out socially?</p> <p>Less than once a week</p> <p>About once a week</p> <p>More than once a week.</p> | <p>13. What kinds of music do you most like
to listen to? (please tick as many as
necessary)</p> <p>None</p> <p>Top 40 chart music</p> <p>Classical</p> <p>Country and Western</p> <p>Dance</p> <p>Easy listening</p> <p>Hip hop</p> <p>Jazz</p> <p>Metal</p> <p>Opera</p> <p>Rock</p> <p>Other (please describe)</p> <p>BOX</p> |
| <p>11. How would you describe the status of
your current sexual relationships?</p> <p>Single</p> <p>Celibate</p> <p>Partnered, monogamous couple</p> <p>Partnered, open couple</p> <p>Partnered, monogamous multiple partners</p> <p>Partnered, open multiple partners</p> <p>Married, monogamous</p> <p>Married, open relationship</p> <p>Other (please describe)</p> <p>BOX</p> | <p>14. What kinds of books do you like to
read? (please tick as many as necessary)</p> <p>None</p> <p>Horror</p> <p>Crime</p> <p>Thriller/adventure</p> <p>Science fiction</p> <p>Romance</p> <p>Literature</p> <p>Poetry</p> <p>Biographies</p> <p>Lifestyle (cooking, gardening, travel etc)</p> <p>Other non-fiction</p> |
| <p>12. Which television channel do you tend
to watch most often (please tick only
one)?</p> <p>None</p> <p>Seven</p> <p>Nine</p> <p>Ten</p> <p>ABC</p> <p>SBS</p> <p>WIN</p> <p>NBN</p> <p>Prime</p> | |

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Other (please describe) BOX	None - mainly view/download free material from the internet
15. If you regularly read a newspaper, which one?	None - mainly borrow/exchange with friends
Don't read a newspaper	Videos
The <i>Daily Telegraph Mirror</i>	DVDs
The <i>Courier Mail</i>	Magazines
The <i>Mercury</i>	Novels
The <i>Australian</i>	Internet (pay sites)
The <i>Herald Sun</i>	Other (please describe)
The <i>Australian Financial Review</i>	BOX
The <i>Age</i>	
The <i>Sydney Morning Herald</i>	18. How large is your current collection of pornography (including magazines, videos, DVDs, downloaded internet material, novels or any other format)?
The <i>West Australian</i>	None
The <i>Koori Mail</i>	Under 10 items
The <i>Advertiser</i>	11-25 items
The <i>Northern Territory News</i>	26-50 items
Other (please describe)	50+ items
BOX	
16. How much money do you spend on pornography each month?	19. Do you use your pornography only once, or do you use it more than once?
None - don't get new material	Don't use pornography
None - mainly download free material from the web.	Only once
None - mainly borrow/exchange material with friends	Sometimes go back to favourites (please list)
Under \$50	Often go back to favourites (please list)
\$51-\$100	BOX
\$101-\$150	
\$151+	20. Do you think there are any 'classic' porn videos, DVDs, novels, internet sites or magazines?
17. Which kinds of pornography do you mainly buy? (tick as many as necessary)	No
None - don't get new material	Don't know
	Yes (please list them)

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BOX

21. How do you decide what pornography
you're going to buy? (please tick as
many as necessary)

Don't buy pornography

Recommendation from a friend

Reviews in magazines

Reviews on the internet

Advertisements in magazines

Advertisements on the internet

Description in catalogues

Cover photograph

Description on back cover

Because of the author

Because of the star

Because of the director

Other (please describe)

BOX

22. How do you usually consume your
pornography?

Don't consume pornography

Alone

With a partner

With more than one partner

With a crowd

Other (please describe)

BOX

23. How many times would you use
pornography in an average week?

Don't consume pornography

Less than once a week

Once a week

Up to three times a week

More than three times a week

24. In an average week, how many hours
would you spend using pornography?

None

Less than an hour a week

Between one and three hours a week

Between three and five hours a week

More than five hours a week

25. What do you think makes for good
pornography? (please tick as many
boxes as necessary)

Quality of writing

Good storyline

Specific kinds of sex (please specify)

BOX

Attractive actors/actresses

Good acting

Enthusiasm in sex scenes

Realistic settings

Real-looking bodies

Good production values (lighting,
camerawork, etc)

Other (please specify)

BOX

26. Generally, how happy are you with the
pornography that you consume?

Very unhappy

Unhappy

No strong feeling

Happy

Very happy

27. If you answered 'unhappy' or 'very
unhappy' to the previous question,

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how would you improve the pornography that you consume?	31+
BOX	32. What effect has pornography had on your attitudes towards sexuality?
28. Which of the following practices do you like to be present in pornography? (please choose as many as necessary)	Never consumed a pornographic text
Rape, simulated	A large negative effect (please provide brief details)
Rape, real	A small negative effect (please provide brief details)
Murder during sex, simulated	No effect at all
Bestiality	A small positive effect (please provide brief details)
Children having sex	A large positive effect (please provide brief details)
None of the above	BOX
29. Have you ever been shocked or disturbed by a pornographic text?	33. How do you usually vote?
Never consumed a pornographic text	Liberal/National
No	Labor
Don't know	Democrat
Yes (please provide details)	Green
BOX	One Nation
30. Have you ever applied anything that you saw in pornography in your own sex life?	Other (please describe)
Never consumed a pornographic text.	BOX
No.	34. How would you describe your religion?
Don't know	Catholic
Yes (please describe)	Anglican
BOX	Protestant
31. How old were you when you first read or saw pornography?	Methodist
Never consumed a pornographic text	Other Christian
Under 16	Buddhist
16-20	Atheist
21-30	Muslim
	Other (please describe)
	BOX

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	Strongly disagree
35. How would you describe your own	Disagree
politics about gender?	No opinion on the issue
Strongly against feminism	Agree
Slightly against feminism	Strongly agree
Not interested in gender politics	
Slightly feminist	39. It is acceptable for a woman to stop a
Strongly feminist	sexual encounter at any point, no
	matter how keen she may have been
	initially.
For each of the following statements,	Strongly disagree
please tick the box that shows the extent to	Disagree
which you disagree or agree with the	No opinion on the issue
statement.	Agree
36. Women should get equal pay for equal	Strongly agree
work.	
Strongly disagree	40. It is acceptable for women to be
Disagree	sexually assertive.
No opinion on the issue	Strongly disagree
Agree	Disagree
Strongly agree	No opinion on the issue
	Agree
37. Women should have access to	Strongly agree
abortion on demand.	
Strongly disagree	
Disagree	41. I would not mind working for a female
No opinion on the issue	boss.
Agree	Strongly disagree
Strongly agree	Disagree
	No opinion on the issue
38. It is acceptable for women to continue	Agree
to work outside the home after they	Strongly agree
have children, if they want to.	

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EXHIBIT 15

Sex film viewing, but not hypersexual concerns, are associated with more sexual arousal in
anticipation of an intimate partner experience

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Abstract

A primary argument that hypersexual behaviors are worth clinical attention is that it impairs functioning, either by decreasing individuals' ability to engage with real-life sexual situations or their romantic relationships with others. Impairment predictions from sexual compulsion models were investigated in pre-registered analyses in a partnered meditation practice that includes manual genital stimulation. Couples (N=125) attended one laboratory session. They rated their sexual arousal, engaged in Orgasmic Meditation (OM) while galvanic skin response (GSR) was recorded in the stimulated partner, then rated their sexual arousal again. Problematic hypersexuality did not predict subjective or physiological arousal with a partner. Those who viewed more sexual films reported more sexual arousal before starting OM, and did not differ in their sexual arousal experienced after OM. Despite sufficient statistical power, hypersexual problems did not predict sexual responses with a partner and sex film viewing increased, not decreased, the sexual arousal preceding intimate partner interaction. This is inconsistent with models of hypersexual problems as compulsive or addictive. Future studies may measure more naturalistic sexual experiences or target individuals with even more distress about their hypersexual problems.

Keywords: compulsive sexuality; sex addiction; pornography; visual sexual stimuli; orgasmic meditation

Sexual arousal is positively related to sexual film viewing and unrelated to hypersexual problems in a convenience sample of couples in a partnered, intimate practice

Frequent sexual urges or behaviors have been linked to distress, and debate exists concerning how to best characterize this distress. One way to understand this distress is as a part of compulsive sexual behaviors. The sexual compulsivity model of these behaviors has been described as sexual “behavior that is driven by anxiety reduction rather than sexual desire” (Coleman, 1990, p. 9). Consistent with other compulsivity models from non-sexual domains ([Najmi et al. 2010](#)), this theory thus suggests that sexual compulsivity is a function of reducing negative, rather than changing positive, affect. That is, in the sexual compulsivity model, an affected person might be motivated to engage in sexual behavior by sexual desire, but is always motivated by negative affect (not necessarily related to sex); a non-affected person engages in sexual behavior primarily from sexual desire, although they might also use sex to regulate negative affect and not feel concern about this strategy ([Prause 2017](#)).

Here, we specifically address contributions of negative, as compared to positive, affect in compulsivity ratings. This distinction is important as sexual compulsivity has been included in the International Classification of Disorders ([ICD, Grant et al., 2014](#)) and a cottage industry devoted to treating sexual compulsivity has erupted (Ley, Prause, & Finn, 2014). And yet, this definition is not specifically supported by a theoretical model. To justify the clinical attention and financial resources predictions of the sexual compulsivity model must be supported. One claim of the sexual compulsivity model is functional impairment. Specifically, those who are sexually compulsive should struggle to experience sexual arousal with a human partner (Blais-Lecours, Vaillancourt-Morel, Sabourin, & Godbout, 2016). Relatedly, others have

suggested that sexual compulsivity negatively affects an individual's relationships (Skegg, Nada-Raja, Dickson, & Paul, 2009). In the sexual compulsivity model, this arousal impairment is hypothesized to occur because compulsivity is characterized by constantly high levels of negative affect that the sexual behaviors are used to reduce (Bancroft & Vukadinovic, 2004). We test the assumption of impairment due to sexual compulsivity by examining whether people, or their partners, experience increases or decreases in sexual arousal during real-world partnered sexual behaviors as a function of individual differences in distress about hypersexual behaviors.

One reason this work is important is that it could help differentiate between competing models of "out of control", frequent sexual behaviors including impulsive, compulsive, and addiction models (Ciocca et al., 2018) as well as normal variation that is not clinically relevant (Prause, 2017a) in a general sample. Compulsivity is transdiagnostic construct describing a habit of problematic decision making that has become separated from behavioral goals (e.g., Tracy, Ghose, Stecher, McFall, & Steinmetz, 1999). Those with compulsivity have been characterized by enhanced autonomic responses to stressors of all types, which are slow to resolve (Hoehn-Saric, McLeod, Zimmerli, & Hipsley, 1993).

Impulsivity models of behavior are heterogeneous, but generally describe rapid decisions to act with little forethought ([Evenden 1999](#)). Impulsive behaviors have been described as characterized by feelings of urgency, lack of premeditation, low perseverance, and high sensation/excitement seeking ([Whiteside and Lynam 2001](#)). People with impulsive problems appear to have lower conditional associative learning abilities, which results in poorer inhibition during decision making ([Finn et al. 1999](#)). Sexual impulsivity, then, is a tendency to engage in sexual behaviors quickly or without fully thinking through the consequences ([Erez et al. 2014](#)).

Impulsivity is correlated with a variety of risky sexual behaviors ([Black et al. 2009](#)), [although not consistently across gender and sexual orientations \(McCoul and Haslam 2001\)](#).

An extensive literature disambiguating compulsivity from impulsivity exists. Persistence has been proposed as a key distinguishing feature, where compulsive behaviors are uniquely resistant to extinction (T. Robbins, Curran, & de Wit, 2012). Berlin and Hollander (2014) highlight a number of differences in impulsivity and compulsivity with respect to pathology. Impulsive behaviors are not well thought out when performed, whereas compulsions are understood as harmful, perseverative rituals that feel emotionally compelling to perform. Impulsive behaviors tend to occur with feelings of pleasure (ego syntonic), where compulsions are often performed to reduce tension (ego-dystonic). Further, impulsive behaviors are characterized by action without foresight, where compulsive behaviors are planned, ruminative, rigid, and stereotypic. These constructs also have differentiable neuroanatomy (T. W. Robbins, Gillan, Smith, de Wit, & Ersche, 2012). Those with compulsivity have been characterized by enhanced autonomic responses to stressors of all types, which are slow to resolve (Hoehn-Saric, McLeod, Zimmerli, & Hipsley, 1993).

A third popular pathology model is the sexual addiction model. While addictions are characterized by varying elevations in compulsivity and impulsivity, the addiction model adds unique predictions of behaviors. Time-course is thought to be a defining feature, where the behavior initially is pleasurable and liked, but becomes craved and experienced with less pleasure (Kalivas & O'Brien, 2008; Robinson, 1993). Further, tolerance and withdrawal tend to be uniquely predicted by addiction models (Koob & Le Moal, 2008). For example, addictive

sexual behaviors are thought to be characterized by a lesser sexual response to the same stimulus over time (Zapf, Greiner, & Carroll, 2008).

The claim that compulsivity could lead to sexual difficulties with a partner is consistent with other pathology models, such as that of anxiety mediation of erectile dysfunction. Anxiety is well-characterized as a predictor of sexual arousal difficulties, especially erectile difficulties (Barlow, 1986). While the relationship between anxiety and sexual arousal is sometimes complex (Barlow, Sakheim, & Beck, 1983), very high levels of anxiety appear to consistently diminish feelings of sexual arousal (Bradford & Meston, 2006). It may be that no separable “compulsive sex” pathology exists, but people who believe they have this problem are simply more anxious about sex. None of these predictions have been tested with real-world sexual behaviors, which is the first step to determine whether sexual compulsivity is useful to assess in patient populations.

Research on hypersexual problems often claims that laboratory reactivity informs real-world reactivity. This is not intuitive and is empirically testable; in fact, the relationship of sex film viewing and self-reported sexual experiences with a partner has been explored empirically. One study reported an association between erectile dysfunction and “hypersexuality” (Klein, Jurin, Briken, & Štulhofer, 2015), which they suggested could be attributable to romantic attachment difficulties. However, most studies have not found support for this relationship (Landripet & Štulhofer, 2015; Prause & Pfaus, 2015a, 2015b). A nationally representative Australian sample similarly found no relationship between the volume of sex film viewing and sexual difficulties (in general) with a sexual partner (Rissel et al., 2017). A large (n=211) laboratory study of men characterized as clinically hypersexual or not hypersexual similarly did not identify differences in erectile responses to sexual films by patient status

([Janssen et al. 2020](#)). Some have suggested that those who are anxious about their sex film viewing might struggle with their erections, while the sex film viewing itself is not impacting erectile functioning (Grubbs & Gola, 2019). These somewhat mixed findings also might reflect the negative effects paradigm, such that sex films are presumed to only possibly exert negative changes in sexuality and positive effects are rarely measured (McCormack & Wignall, 2017). Further, distress about sex film viewing might reflect moral concern about normal sexual desire. For example, more sexual arousal to sex films was associated with reporting more problems with Internet sexual activities (Brand et al., 2011). Thus, in the current study, we measure the relationship of sex film viewing and sexual arousal experienced with an intimate partner in the laboratory.

Viewing a sex film differs in a number of ways from actual sexual stimulation (Prause, 2017a). Perhaps only actual hypersexual behaviors (not limited to sex film viewing) are negatively associated with sexual arousal to an intimate partner. Sex films are only cues, or secondary rewards, for sexual behaviors, the primary reward (Prause, 2017a). Rewards are reinforcements to increase behaviors, and they can be characterized as “primary” or “secondary” (Valentin & O’Doherty, 2009). Actual sexual stimulation involves motor generation, input, and processing. Also, sexual intercourse occurs in a social context not accounted for by sex film models of sexual behaviors. To address this missing link, different from all existing laboratory studies, the current study examined actual primary sexual interaction.

Distress associated with frequent sexual film viewing could be understood as reflecting behavioral dysregulation to either the Internet or sex with intimate partners. Some have classified problematic sex film viewing as a type of Internet use problem ([Grant et al. 2014](#)). Others

classify problematic sex film viewing as a symptom of hypersexual disorder affecting 81.1% of patients (Reid et al., 2012). Conversely, patients specifically seeking treatment for pornography rarely reported problems with high frequency partnered sexual behaviors (Parsons, Kelly, Bimbi, Muench, & Morgenstern, 2007; Wéry & Billieux, 2017).

Sexual compulsivity has been associated with lower sexual satisfaction with intimate partners (Skegg et al., 2009). In fact, sexual relationship dissatisfaction is part of some questionnaires measuring sexual compulsivity (e.g., Lee, Ritchey, Forbey, & Gaither, 2009), risking criterion contamination. Sexually compulsive men who have sex with men are thought to “maintain protracted states of sexual arousal” (Grov, Parsons, & Bimbi, 2009, p. 941). Clinicians have similarly speculated that “sexual preoccupation keeps a level of arousal going constantly” in patients (Carnes, 2013, p. 22). Others describe sexual behaviors in compulsive sex as occurring “even when he/she derives little or no satisfaction from it” (Kraus et al., 2018, p. 109). Together, these present a clinical picture of sexual compulsivity in which patients remain more sexually aroused than non-patients, and experience little change in their sexual arousal following partnered sexual behavior.

However, these reports of sexual arousal problems with partners are not documented consistently. A review of clinical cases referred for hypersexual problems similarly did not identify erectile problems with intimate partners in those patients (Sutton, Stratton, Pytyck, Kolla, & Cantor, 2015). Men [higher on sexual compulsivity scores](#) did not demonstrate erectile problems in the laboratory (Hoffmann, Goodrich, Wilson, & Janssen, 2014). Sexually compulsive women are described as using sex to reenact past trauma, not motivated by sexual arousal (Rickards & Laaser, 1999). Further, patients who described engaging in sexual behaviors

compulsively did not exhibit greater sexual excitation (Bancroft & Vukadinovic, 2004).

Problems related to using the Internet for sex (not just sex films) also was unrelated to reported partnered sexual behaviors or satisfaction with those sexual behaviors (Laier, Pawlikowski, Pekal, Schulte, & Brand, 2013). In the current study, we examine whether hypersexual problems are related to the experience of sexual arousal with an intimate partner in the laboratory. We are not testing every prediction made by every model. Rather, we will differentiate models by examining the one prediction of each model about partnered sexual arousal.

Sexual arousal experienced with an intimate partner is thought to be influenced by sexual compulsivity. We measured two aspects of distress from frequent sexual urges and behaviors: (1) the total time involved in viewing sex films (Matthias and Brand, 2017) and (2) distress due to sexual behaviors that feel out of control (Wordecha et al, 2018; Schneider et al, 2000). Distress about frequent sex film viewing is commonly treated as a “sex addiction” (Zitzman & Butler, 2005). However, assessing these separately is appropriate as sex films reflect a secondary reinforcement and motoric sexual stimulation reflects the primary reinforcement.

Orgasmic Meditation

To test our hypotheses, we needed a safe, predictable partnered sexual interaction protocol. This means a protocol that is explicitly consensual, standardized, and not a disease risk. A protocol ensuring continual consent should minimize volunteer bias (Rogge et al., 2006). While such safeguards can disrupt sexual experiences (Crosby, Milhausen, Yarber, Sanders, & Graham, 2008), they were necessary for safely testing in a laboratory environment. Sexual

anxiety was minimized by not demanding erections (Barlow, 1986) or orgasms (Chadwick & van Anders, 2017).

Orgasmic Meditation (OM) is a form of partnered meditation that met study requirements. Further fifteen minutes of the practice is indirect, manual stimulation of the clitoral shaft, which is the preferred area for female genital stimulation (Schober, Meyer-Bahlburg, & Ransley, 2004). Human clitoral touch afferents also are active in roles of social touch (Georgiadis & Kringelbach, 2016). OM is described in detail in Appendix A.

Current study

Different models of “out of control” sexual behaviors make different predictions about sexual arousal experienced with a partner (Prause, 2017b; Walton, Cantor, Bhullar, & Lykins, 2017). A compulsivity model predicts that behaviors are engaged in habitually and become dissociated from goals. For sex, we interpret compulsivity as predicting less sexual arousal following partnered sexual stimulation. An impulsivity model predicts that intense behaviors are pursued without planning to cause a pleasurable reaction in a person that struggles with underreactivity. For sex, we interpret impulsivity as predicting a greater increase in sexual arousal following partnered stimulation. An addiction model predicts that craving for stimuli drives behavior, not pleasurable liking, and tolerance develops to the stimulus over time. Some have described individuals having “impairments of sexual arousal...in intimate relationships” (Valerie Voon et al., 2014, p. 5). For sex, we interpret that the addiction model predicts high sexual arousal prior to engaging in sexual activity, with significantly less/no increase in sexual arousal following partner intimacy due to tolerance to such a repeated, standard intimate experience. A normal variation (non-pathology) model predicts that sexual behaviors are

engaged in more by those who enjoy them more, and that while there may be some distress, (e.g., about societal stigma over their frequency) there are not detectable, functional sequelae. In sum, distress about sexual behaviors that feel out of control may be associated with lower sexual arousal following the sexual interaction (compulsivity), a greater increase in sexual arousal following stimulation (impulsivity), sexual arousal that may decrease or not change after stimulation (addiction), or sexual arousal that increases with stimulation and is not related to distress (normal variation). For this reason, all of our tests were two-tailed. We tested the relationship between experienced sexual arousal before and after OM as predicted by these individual differences. Consistent with best practices, we registered primary hypotheses through the Open Science Framework (<https://osf.io/zf4vd/register/564d31db8c5e4a7c9694b2be>)

H1) Feeling that one's sexual behaviors are out of control will predict sexual arousal experienced with a partner after controlling the sexual arousal experienced in anticipation of the partner stimulation.

- a) Compulsivity and addiction models predict that the association with sexual arousal after partnered stimulation is negative.
- b) Impulsivity models predict that the association with sexual arousal after partnered stimulation is positive.

H2) The amount of sex film viewing will predict sexual arousal experienced with a partner after controlling the sexual arousal experienced in anticipation of the partner stimulation.

- a) Compulsivity and addiction models predict that the association with sexual arousal after partnered stimulation is negative.

- b) Impulsivity models predict that the association with sexual arousal after partnered stimulation is positive.

GSR was only recorded from the strokee. GSR is known to be sensitive, but not specific, to sexual arousal ([Zuckerman 1971](#)). Thus, GSR was included only as a secondary measure of general arousal. We expected GSR would follow the same predictions as for sexual arousal, since it is an index of arousal broadly. These were not included in the preregistration:

H3) Feeling that one's sexual behaviors are out of control and sex film viewing will be associated with GSR change.

Methods

Participants

Participants comprised 125 couples (N=250) who had practiced OM at least 10 times in their lifetime, so that they had a general familiarity with the practice (see Table 1). They were recruited through both social media advertisements (Twitter, Facebook) and by word of mouth, including sharing on OM listservs. Participants had to be 18 years old or older, free from a history of neuropsychiatric diagnosis (e.g., stroke, MS), have normal or corrected-to-normal vision, and have a regular OM partner who also would qualify and participate. Partners were not required to be romantic partners. Each participant agreed to abstain from any alcohol or recreational drug use in the 24 hours prior to participating. The laboratory was mobile (see below), so participants were tested in private settings that included apartments, office, and event spaces in Los Angeles, San Francisco, and New York, so long as privacy could be protected.

Demographic questionnaires

Background information was collected on participant's levels of sensation seeking, touch avoidance, pathology symptoms, and sexual assault history. These are used to characterize the sample. The Need Inventory of Sensation Seeking ([Roth and Hammelstein 2012](#)) measures the need to seek varied, novel, complex and intense sensations and experiences. It is a 17-item list of statements that can be endorsed as feeling each 1 (almost never) to 5 ("almost always") in the last six months (range 17 to 85). Higher scores indicate a greater need for sensation seeking. The scale is commonly broken into subscales of "Need for Stimulation" and "Avoidance of Rest" each ranging from 1 to 5 ([Marker and Schneider 2015](#)). Depressive symptoms were assessed using the Quick Inventory of Depressive Symptoms ([John Rush et al. 2003](#)). This scale score ranged from 0 to 27 with scores 6 or below considered inconsistent with depression. The 16-item Anxiety Sensitivity Inventory ([Reiss et al. 1986](#)) was used to quantify threatening beliefs regarding feelings of arousal. Each item is rated 0 (not at all) to 4 (very much) providing a range of 0 to 64. Some have suggested that the scale contains two underlying factors, but these may be hierarchical ([Schmidt and Joiner 2002](#)). Thus, we use a single score for this scale. Finally, participants were asked two questions about their history of sexual abuse and assault. "Have you had sex (oral, anal, genital) BEFORE age 16 when you did not want to because someone forced you in some way or threatened to harm you if you did not?" and "Have you had sex (oral, anal, genital) AFTER or when you were 16 years old when you did not want to because someone forced you in some way or threatened to harm you if you did not?" ([Rellini and Meston 2007](#)).

Hypersexual problems

Consistent with previous, independently-replicated research (Graham, Walters, Harris, & Knight, 2016; Walters, Knight, & Långström, 2011), hypersexual problems were quantified as a dimensional, individual difference construct. To understand whether sexual compulsivity is best thought of as one or more constructs, we subjected the widely-used Hypersexual Behavior Inventory (Reid et al. 2011) to exploratory factor analysis. This analysis supported a single factor solution (see Appendix), for which the majority of variance was accounted for by a single item: “Even though I promised myself I would not repeat a sexual behavior, I find myself returning to it over and over again.” Response options ranged from 1 (“Never”) to 5 (“Very often”). As shown in the Appendix, the single item showed convergent validity and replication with previous studies of romantic attachment. Specifically, it was moderately correlated with both anxious attachment and avoidant attachment (see Appendix). The diagnostic proposal for ICD-11 has not been used nor tested to date. In addition to the construct best be conceptualized continuously, this further supported the use of a continuous scale, rather than a categorical approach.

. To reduce the scale to only item(s) necessary to capture underlying factor, a graded response model was applied. One item (see above) had the highest discriminability of all 19 items ($d=4.28$). Further, the receiver operator curve analysis predicting the results of a clinical interview for this item alone was very high ($AUC=.91$) with good specificity (88%) and reasonable sensitivity (75%).

Sex film viewing

Participants were instructed “Think of a typical week in the last three months. How many minutes did you view adult sex films ("porn") in this week?” Response options ranged from “0” to “More than 10 hours” in 10 minute increments (62 choices). Each hour was noted alongside

the minutes to aid estimations. This approach is consistent with previous studies to estimate current levels of consumption (e.g., Prause, Steele, Staley, Sabatinelli, & Hajcak, 2015). While attempts have been made to create composite measures of sex film involvement, such as including the age of regular viewing initiation, these measures face the same challenges raised by sexual risk composite measures. We follow the advice for sexual risk measures (Catania, Gibson, Chitwood, & Coates, 1990) in examining individual items rather than composites.

Galvanic skin response (GSR)

GSR is thought to index sympathetic tone. Sympathetic nervous system activity reliably facilitates sexual arousal (Meston, 2000), including galvanic skin response (Laan, Everaerd, & Evers, 1995; Wenger, Averill, & Smith, 1968). While GSR is sensitive to sexual arousal, it is not specific to sexual arousal (Zuckerman, 1971). GSR also increases during other emotional experiences (Dawson, Schell, & Fillion, 2007), making GSR less desirable than genital measures for sexual arousal assessments when affective states are mixed (Hain & Linton, 1969; Zuckerman, 1971). GSR was recorded from the strokee throughout the 15 minutes of genital stroking in a single OM session in 100 strokees. These data have been shown to be monotonic and change (increase or decrease) in GSR related as expected to state measures experienced following genital stroking, including feeling anxious or close to others (Siegle & Prause, under review). . As objective and subjective measures of arousal frequently diverge, GSR was examined to test whether objectively measured arousal was related to measures of sexual compulsivity or sex film viewing. The GSR analysis was not pre-registered for this purpose, as GSR was being collected primarily for a different study. Given the divergence of self-report and

physical indicators of arousal in sexuality studies, we decided GSR were worthwhile to add as an exploratory approach to complement the pre-registered analyses.

Of the N=125 participants on whom GSR data were collected, data loss (data file corrupt, N=5, physiological data not stored N=3, timing markers not stored N=5, recording terminated early, N=3, non-reactive GSR, N=12, left N=93 couples (of 125 couples) available for analysis .

Task

Instructions were presented on a monitor on the ground, placed to be visible to the stroking partner, and included brief auditory alerts during each OM transition. The stroker was instructed by the experimenter to press any key after completing each stage. During “Stroking” and “Stroking 2 minutes” the computer timed for 13 minutes and 2 minutes, respectively, advancing automatically. These reflect the stages practiced in OM (see above).

Sexual arousal rating

Immediately before and after the OM, participants rated the level of “sexual arousal” (0-“Not at all”, 7-“Extremely”) that they felt. Rated sexual arousal was the primary dependent variable.

This rating approach was first used by Heiman and Rowland (1983) and is a common approach used to study felt sexual response in men and women ([Handy et al. 2018](#)). Rated sexual arousal tends to converge strongly with genital response in men (Chivers, Seto, Lalumière, Laan, & Grimbos, 2010). Sexual arousal ratings are uniquely elevated to sexual stimuli (e.g., as compared to exciting films in Staley & Prause, 2013). Physiological genital arousal was not measured. With the hand over the vulva and thumb over the vaginal os, we felt large, irregular artifacts

were very likely to render many possible measures impossible to process. Also, felt sexual arousal is prioritized over physiological measures in making clinical judgments of sexual problems, especially for women (Bancroft, Loftus, & Long, 2003). Also, the presence of the thumb over the introitus would make vaginal and vulvar measures impossible without inventing new instrumentation for the purpose (e.g., robust to thumb movements, not confounded by heat from the hand, etc.). Finally, physiological sexual arousal that does not reach conscious awareness through attention is not expected to influence sexual function or behaviors. Given that the goal of the study was to characterize responsiveness to, and regulation of, sexual responses that are expected to affect problematic urges to behave sexually, self-reported sexual arousal ratings were the primary dependent variable.

Procedure

All study procedures were continuously approved by the University of [blinded for review] Institutional Review Board. Volunteers were contacted by phone and screened for inclusion criteria (see Participants). Each identified their intended partner by name, who volunteered independently and also provided that person's name. They were scheduled for one, three-hour session in a private environment. Informed consent was obtained from all individual participants included in the study. After providing informed consent, they completed a series of questionnaires assessing demographics, sexual history, experience with OM, mental health, emotional attachment, and current feelings of closeness to their OM partner, closeness to others, and emotions. They then donned equipment for assessment of electroencephalography. They completed a series of three computer tasks, one assessing their emotional responsivity, a

persistent vigilance task, and a paced serial addition task. Results of the other physiology and tasks will be reported elsewhere.

Afterwards, they completed one OM in a private room while their biological signals were monitored using additional physiological monitoring equipment. The couple set up their space as desired for the OM. The experimenter attached biological recording devices designed to not restrict movement. The strokee removed their clothing. The stroker advanced the OM by pressing a key beside him or her on the floor (detailed above). The experimenter was outside the closed space during the OM.

After the OM, participants completed the same computer tasks again. They then answered questions about their response during the OM and their current feelings. Participants were offered the opportunity to ask any questions that they had. Each participant received \$25 cash. Data were anonymized by eliminating all links with their Informed Consent. No one withdrew during the session.

Data analysis

The primary tests used the hypersexuality measures to predict sexual arousal responses in the laboratory. The hypersexuality item was slightly skewed ($skew = .6$, $z = 3.9$, $p < .001$), which log-transform corrected. Also, three participants did not answer this question. Regular sex film viewing was denied by 50% of participants ($N = 125$ of 250), requiring an approach accounting for zero-inflation. The R library PSCL (Zeileis, Kleiber, & Jackman, 2008) zero-inflation was used, which uses the partial Wald tests of coefficients (Engle, 1984). In both analyses, sexual arousal reported before the OM was entered first as a control.

Finally, GSR was transformed from raw to relative units (see above for details, Boucsein et al., 2012).

Analyses were powered to detect small effect sizes for both strokers ($1-\beta = .8$, $df = 2$, self-report $df = 118$, $f^2 = .08$, GSR $df=91$, $f^2 = .1$) and strokees ($1-\beta = .8$, $df = 2$, self report $df = 119$, $f^2 = .08$, GSR $df=91$, $f^2 = .1$) if they had been present.

Results

In questionnaires, participants did not show any evidence of pathology consistent with depression or anxiety (see Table 1).

(see Table 1). A majority of participants, men and women, reported some distress about engaging in unintended sexual behaviors (see Table 1). Specifically, 2 ($n=96$) and 3 ($n=55$) were frequently endorsed, while some also endorsed 4 ($n=11$). The highest response rating 5 (“Very often”) was rarely endorsed ($n=5$). The proportion endorsing concern did not differ significantly by their role in the OM.

Sexual arousal reported increased significantly from before OM to after OM ($t(243)=-8.7$, $p < .001$, $CI = -.8$ to $-.5$, $g_{Hedges} = .59$). The average increase was .7.

Sexual arousal experienced

Distress about hypersexuality was not associated with sexual arousal reported after OM for either strokers or strokees after entering sexual arousal reported before OM ($p > .9$).¹ To test

¹ Sexual arousal reported before the OM was correlated with the sexual arousal reported after the OM, raising the possibility that the effects of hypersexual concerns might be obscured by our statistical approach. We also tested hypersexual concerns and sexual arousal reported before the OM as an interaction term, as well as sexual arousal reported before the OM as a mediator of a relationship between hypersexual concerns and sexual arousal reported after the OM. In no analysis, including the direct relationship of hypersexual concerns to arousal after the OM not accounting for arousal before the OM, were hypersexual concerns a significant predictor of sexual arousal reported after the OM.

whether effects might emerge given a much larger sample, a counternull coefficient ([Rosenthal and Rubin 1994](#)) was calculated based on the non-significant correlation values for sexual arousal rated before OM ($r=.03$) and sexual arousal rated after OM ($r=.07$). Counternull coefficients for sexual arousal ratings before OM ($r\text{-counternull} = 0.06$) and after OM ($r\text{-counternull} = 0.14$) remained small. These indicate that the non-significant effects we reported are as likely to contain zero as a small effect.

The amount of sex film viewing was related to sexual arousal reported before starting the OM (poisson with log link coef = .11, SE = .04, $z = 2.6$, $p = .009$)², but was not related to sexual arousal reported after the OM (see Figure 1). People who view sex films report more sexual arousal before starting an intimate interaction the more minutes per week they viewed.

Galvanic skin response (GSR)

Galvanic skin response of the strokee was unrelated to measures of sexual compulsivity (r 's $<.005$). Similarly, the relationship of sex film viewing and GSR in the strokee was not significant ($r = -.08$, $p = .46$). However, the strokee's GSR was positively related to the strokers viewing of sex films ($\rho = .23$, $p = .03$; see Figure 2).

Conclusion

Concern about hypersexual behaviors was not significantly related to the experience of sexual arousal with a partner, despite the study being sufficiently statistically powered to detect small effects (Hypothesis 1A and 1B). Those who viewed more sex films reported higher sexual arousal before starting OM, and sex film viewing was not associated with sexual arousal after OM (Hypothesis 2A and 2B). The more time the stroker spent viewing sex films, the greater the

² We also removed the four women who served as strokers, and the pattern of this effect did not change.

autonomic arousal exhibited by the strokee. Concern about hypersexual behaviors and sex film viewing did not impede sexual arousal with a partner as measured in this study. In fact, viewing sex films was associated with two indicators of higher sexual arousal.

The different models made different predictions about how feeling sexually out-of-control would impact sexual arousal with a partner. Despite having sufficient variance and power, feeling out-of-control was not predictive of sexual arousal or general arousal during this intimate partnered experience. However, sex film viewing predicted sexual arousal experienced and physiological general arousal. Experiencing greater sexual arousal in anticipation of partner intimacy would be consistent with addiction or normophilic models of sex film viewing; however, addiction models also predict a diminished sexual response to partners, which did not occur. These results appear most consistent with a normophilic model of sex film viewing. This is consistent with previously published cross-sectional and longitudinal studies (described above), which relied on retroactive recall of partner experiences using questionnaires.

Limitations, concerns, and their implications for future research. Volunteer bias is always a concern with laboratory studies. Those who volunteer for psychophysiological studies of sexual response do not consistently differ in many domains (Woo, Brotto, & Yule, 2010) with the exception of generally being higher sensation seeking and more sex positive (Plaud, Gaither, Hegstad, Rowan, & Devitt, 1999). The present participants who practice OM resembled the ethnic diversity of the country well. The rates of adult sexual assault appeared higher in OM participants than the general USA population. Specifically, 28.5% of women in the sample versus 11.5% in the general population, and 2.4% of men in the sample versus 1% in the general population reported adult sexual assault ([Desai et al. 2002](#)). Relatedly, childhood sexual abuse

was reported by 13.0% of women in the sample versus 7% in the general population, and 11.3% of men in the sample versus 2.0% of men in the general population. This may reflect a more victimized sample, or that the question wording in the nationally representative sample was much more restrictive (e.g., required anal or vaginal penetration or attempted penetration). Participants in this study reported levels of anxiety (e.g., [Bravo and Silverman 2001](#)) and depression symptoms that were inconsistent with pathology. Study participants also reported a “Need for Stimulation” similar to another convenience sample for a study of sexual behaviors, but their “Avoidance of Rest” was higher ($M=2.6$ in [Marker and Schneider 2015](#)). Recruitment was minimally restrictive to avoid “super-normal” samples (Kendler, 1990). However, those who practice OM or volunteered for the study may be found to differ in some other systematic way in future studies. This sample may experience hypersexual distress differently than those persons who do not practice OM or chose not to volunteer for this study. A future approach to support stronger external validity could provide instructions to intimate couples in increasingly “usual” settings that are explicitly sexual.

One other limitation of the study is that the current sample was not recruited for hypersexual problems. Individuals with more extreme experiences of hypersexual problems or more frequent viewing of sex films might differ from observations reported here. The potential differences from a treatment-seeking sample could even lead to different conclusions regarding the best-fitting model. For example, depression rates typically are higher in those who seek treatment for hypersexual behaviors. Of course, this raises a serious question about whether hypersexual behaviors are really distinct from depression. Ignoring that concern for a moment, those who are depressed certainly experience avolition and lower pleasure, on average, than

those without depression. That should impact the sexual arousal experience of a treatment-seeking sample in a protocol like this. Whether a protocol to bring those concerned about their hypersexual behaviors into a novel genital stimulation protocol would pass ethics review, we chose not to explore at this time.

Also, sexual response might fail in actual partnered sex, which differs from Orgasmic Meditation. The relationship between self-reported sexual arousal and genital response is often very high in men (e.g., $r = .85$, Sakheim, Barlow, Gayle Beck, & Abrahamson, 1985), suggesting it might be reasonable to assume stroker's judgments of sexual arousal reflect actual erectile responses. The same is not true for women, who sometimes judge their own sexual arousal almost independently of their level of vaginal engorgement (Chivers, Seto, Lalumière, Laan, & Grimbos, 2010). Typically, the coherence is low because women exhibit genital responses, but do not report feeling sexually aroused. Given this direction of women's response bias, it is unlikely that low coherence in women explains observations in the current data. Nevertheless, it remains unclear how Orgasmic Meditation may reflect naturally-occurring sexual behaviors or decision making. As laboratory protocols continue to be developed for partnered intimate activity, they could consider the breadth of sexual behaviors made available, modeling reciprocal sexual stimulation, and allowing decisions to limit engagement in more (e.g., intercourse) or less (e.g., kissing) intense sexual behaviors.

The design does not allow attribution of variance due to gender, because women were always receiving the genital stimulation. It may be that aspects of the protocol are more beneficial for men or women, or would be more beneficial if roles (stroker, strokee) were reversed. Similar clinical speculations have been made about Sensate Focus exercises, which

shares features of safety and predictability with OM, as the cognitive component of Sensate Focus appeared less helpful for women than men (Dove & Wiederman, 2000)(Ferraro, 1996)(Dove & Wiederman, 2000)

The mechanism relating the stroker's sex film viewing and the strokee's GSR is unclear. Since more sex film viewing has been related to higher sex drive, it may be that the stokers had a higher sex drive that they shared with the strokee. For example, the stroking pattern provided by those who view more sex films might be more likely to evoke sexually arousal to share that emotional experience. Emotional contagion are well-documented in romantic couples (e.g., Saxbe & Repetti, 2010). Sexual urges also might be shared in this non-verbal setting. Monitoring the GSR of the stroker (for covariance with the GSR of the strokee) would allow one test of this possibility.

On the use of ecological sexual behaviors. These data represent an important step to test models of sexual compulsivity using actual, partnered, intimate behaviors. Sex films represent a secondary (cue for primary) reward. Those who view sex films overwhelmingly describe using them in a solo setting for masturbation (Baćak a, A, & Štulhofer, 2011; Carvalheira, Træen, & Stulhofer, 2015; Downing, Schrimshaw, Scheinmann, Antebi-Gruszka, & Hirshfield, 2017). In this scenario, genital stimulation is a primary, unconditioned stimulus (UCS) and visual erotica is the conditioned stimulus (CS).

Some have argued that sex films are primary unconditioned stimuli no different than actual sex. For example, passively viewing sexual images and experiencing sexual arousal was described as a "primary sexual reward" (Creswell, Pacilio, Denson, & Satyshur, 2013) or argued that the inability to self-stimulate in the laboratory makes sexual images alone primary rewards

(Gola, Wordecha, Marchewka, & Sescousse, 2016). Of course, images of cocaine also induce cravings for cocaine which are not modelled as the actual cocaine reward (Garavan et al., 2000), and participants in sex film studies report engaging in sexual activities (masturbation, intercourse, partnered sexual activity) immediately after leaving the lab (Both, Spiering, Everaerd, & Laan, 2004). Sex films also appear to manifest very differently in the brain than actual sexual stimulation: viewing sex films involves focused effortful processing and genital stimulation an opposing, “letting-go” neural signature (Prause, 2017a).

The presence of a partner also creates different demands from less social practices such as viewing films (Bancroft, Loftus, & Long, 2003; Willoughby & Vitas, 2012). Human touch also appears unique, such as a hand touch without a glove rated as more pleasant with greater evoked BOLD in insula (left and right) and pgACC than hand touch in a glove (Lindgren et al., 2012). Holding a person’s hand also decreases the pain threat response in proportion to the closeness and quality of the personal relationship (Coan, Schaefer, & Davidson, 2006). Of note, one partnered protocol using manual penile stimulation was conducted (Georgiadis et al., 2010), but did not measure experienced affect, and was not powered to investigate individual differences. Sex film models are inadequate to test predictions related to partnered sex, and this protocol offers one method to examine partnered intimate interactions.

Implications. Sexual compulsivity has been included in the International Classification of Disorders-11. These data tested one core hypothesis of the compulsivity model of sexual behavior. Specifically, “compulsivity” describes being motivated to repeat a behavior despite intentions to stop. We did not find evidence that participants complaining of sexual compulsivity experienced more (or less) motivation to engage in sexual behaviors following OM. There was

evidence that those who viewed sex films at all were more sexually aroused before the OM the more sex films they viewed. This appears more consistent with a high sex drive, where those who seek out more sexual stimulation in films also are more motivated to engage with a partner.

The pathology models of feeling sexual behaviors are out-of-control did not predict experiences of sexual arousal with a partner in the lab. Sex film viewing has been proposed to primarily function as a sign of masturbation and sexual desire (Perry, 2018; Prause, 2019), which may be why those who viewed more sex films continued to be very sexually aroused prior to this intimate experience with a partner. It may be that a construct like sex drive, or personal experiences that influence romantic attachment difficulties, will prove sufficient to explain variation in partnered intimate experiences.

Figure 1. Relationship of sexual arousal before OM and amount of sex film viewing in those who view at least some sex films.

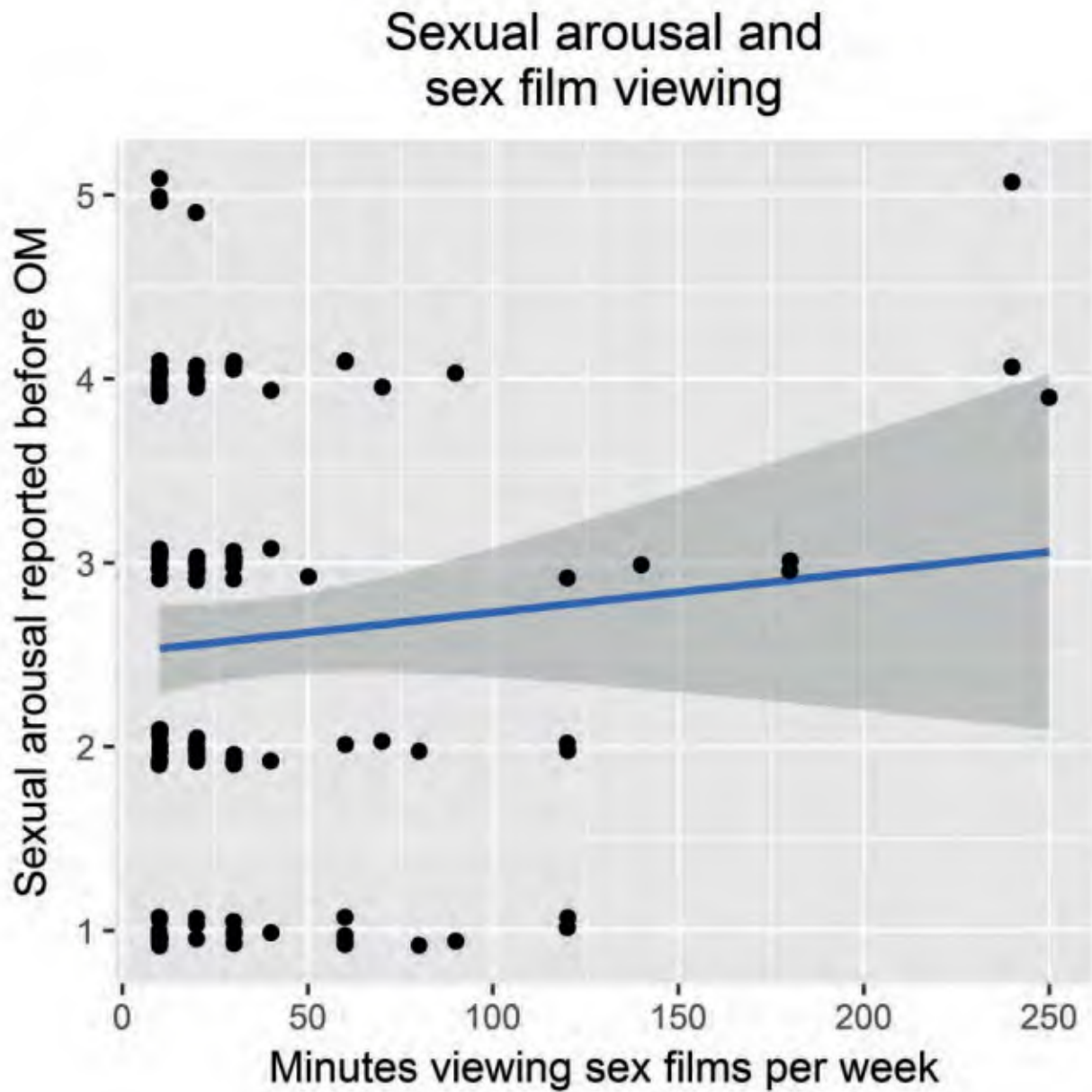
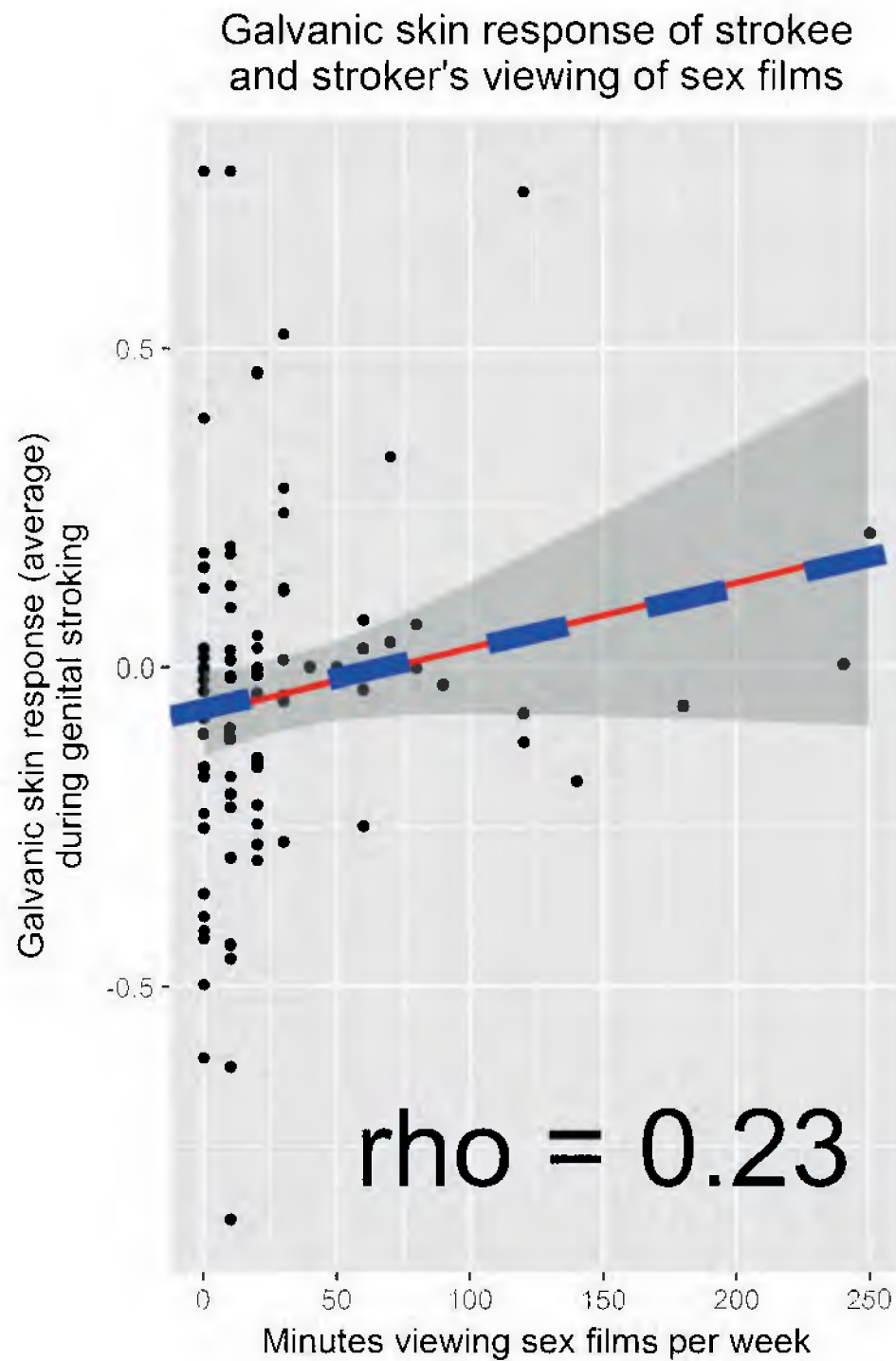


Figure 2. Sex film viewing and GSR response of the female intimate partner.



* Dashed blue line shows relationship if all non-viewers were removed.

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EXHIBIT 16

Letter to the Editor

Neuroscience research fails to support claims that excessive pornography consumption causes brain damageRory C. Reid, Bruce N. Carpenter¹, Timothy W. FongDepartment of Psychiatry and Biobehavioral Sciences, University of California, Los Angeles, ¹Department of Psychology, Brigham Young University, USAE-mail: *Rory C. Reid - rreid@mednet.ucla.edu; Bruce N. Carpenter - bruce_carpenter@byu.edu; Timothy W. Fong - TFong@mednet.ucla.edu

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Dear Sir,

In their editorial on excessive pornography use, Hilton and Watts^[3] offer some interesting neuroscience perspectives on their conceptualization of pornography problems as an *addictive* disorder. They highlight several parallels between dysregulated pornography consumption and other maladaptive behaviors, some of which are viewed as addictions. Although we believe these parallels are worthy of scientific inquiry, Hilton and Watts offered little, if any, convincing evidence to support their perspectives. Instead, excessive liberties and misleading interpretations of neuroscience research are used to assert that excessive pornography consumption causes brain damage. We wish to clarify what the research actually does suggest with several accompanying illustrations.

First, Hilton and Watts assert a “postulate” that “all addictions create, in addition to chemical changes in the brain, anatomical and pathological changes” which they state results in cerebral dysfunction. Depending on how *addiction* is defined, this is either well supported (e.g., brain atrophy arising from the neurotoxicity of alcohol) or wholly speculative as in the case of pornography consumption. A number of studies are cited in support of their position but the interpretation of the findings requires us to assume that cortical atrophy due to some type of excess (cocaine, obesity, or pedophilia) is universal and similarly distributed, and therefore the *type* of excess is irrelevant. Many of the studies cited merely compare groups on brain density scans in cross-sectional designs and inferences about causality cannot be made. For example, their citation of a 2007 study of pedophilia^[1] that used correlational data is reported as evidence that “sexual compulsion can cause physical, anatomic change

in the brain.” Even if such atrophy could be shown in relation to excessive pornography consumption, how much atrophy would actually be necessary before it would functionally impair (e.g., brain damage severe enough to cause behavioral dysfunction) a given individual? The notion that cerebral atrophy assessed through imaging is assumed to be synonymous with brain damage and therefore evidence of an addictive process is a perspective fraught with problems. For example, it is well established that cerebral atrophy occurs progressively as part of normal aging and if such a correlation is considered to be evidence of an addictive process then all of us are “addicted” to growing old. Illustrating a related concern, the imaging study of Miner and colleagues^[5] cited by Hilton and Watts does little to support neuroscientific perspectives on “pornography addiction” given that the majority of the sexually compulsive patient sample had a history of alcohol abuse or dependence and no provisions were made to control for patients with adult ADHD. As a result, it is difficult to determine whether cortical differences and performance on measures of impulsivity in the study were related to hypersexuality, substance misuse, or other pathology already known to be associated with frontal deficits and executive control. Most importantly, the Miner study did not report that any

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of the subjects had problems specifically with excessive pornography use. Collectively, references to neuroimaging studies by Hilton and Watts are unresponsive of their assertion that excessive pornography consumption parallels other maladaptive behavioral patterns such as substance-related disorders or causes significant atrophy in the brain leading to behavioral dysfunction. Even the authors of these studies refrain from drawing such inferences. For example, Franklin *et al*, state "... this study cannot address the etiology of the structural abnormalities. The observed differences may be related to preexisting dysfunction, either environmentally or genetically determined, or a result of the effects of chronic cocaine assault."^[2]

Hilton and Watts seem intent on skewing findings from the studies they cite to support their perspectives rather than evaluating several plausible explanations for the various results reported by study investigators. For example, several explanations exist for the finding of lower density frontal matter in the 2006 study^[6] on obese subjects including dysregulation of insulin or leptin resistance often found in obese individuals. It is also notable that even if the lower density in prefrontal matter of obese subjects, compared to healthy lean controls, was actually a result of atrophy (which this study was not designed to demonstrate), should it be interpreted as evidence demonstrating "visible damage in a natural endogenous addiction" as Hilton and Watts assert? They ignore the possibility that the grey matter differences and any possible frontal neurodegeneration could have predated obesity in the subjects or been an influence of the genetic or biological precipitating risk factors. Indeed, the most parsimonious explanation of the data cited is that frontal deficits may be a risk factor, i.e., preexisting and leading to the poor decision making and excessive indulgence characteristic of each clinical condition. This appears to be a preferred explanation of Schiffer *et al*,^[11] who—contrary to Hilton and Watts' interpretation—hypothesize that early neurodevelopment leads to the brain differences, which serve as a risk factor for the pedophiles they studied.

We are open to the notion that frontal impairment might make people vulnerable to a variety of over-indulgences, which can subsequently lead to substance dependence, maladaptive coping patterns, poor judgment, impulsivity or emotional disturbance, which people may seek to escape by turning to problematic behaviors, such as the case with many pathological gamblers. However, given the lack of studies designed to infer causality, we find it difficult to readily assume the converse — that these diverse dysfunctional behaviors lead to common frontal dysregulation or any cortical atrophy worthy of mention. Admittedly, a causal mechanism strikes us as more likely when substances are involved (e.g., cocaine, high blood sugar, or high lipid levels damaging brain cells), but such

causation is speculative for non-substance activities such as pornography use despite that likelihood that the sexual response cycle activated by pornography consumption also activates endogenous neurochemical reactions in the brain. If we consider that most people eat several times a day, are Hilton and Watson suggesting that the somewhat elevated activity of "eating behavior" is sufficiently different in obese persons to cause brain pathology? Similarly, would they argue that a "runner's high" from extensive exercise leads to brain damage? The parameters of what constitutes pattern, excess, cognitive reward, and the like need to be more clearly explicated and then studied within pornography users.

We are in agreement with Hilton and Watts that the study of executive deficits and frontostriatal systems in patients with dysregulated pornography use or hypersexual behavior is worthy of investigation. Using the proposed DSM-5 criteria for Hypersexual Disorder (HD), our research team has conducted two such studies that have yielded mixed findings. In one study, using neuropsychological self-report measures in a sample of hypersexual men (including those with excessive pornography problems), we found some evidence that executive deficits may exist in this population.^[9] However, when actual performance was assessed on neuropsychological tests sensitive to frontal deficits common in executive dysfunction, no differences were found between hypersexual patients and healthy controls.^[8] We interpreted these findings to support our theory that hypersexuality, including excessive pornography use, is a context specific phenomena which is expressed when triggered by a sexual cue or another stimuli, that when activated, is paired with sexual behavior (e.g., a learned behavior arising in response to dysphoric mood or stress such as been proposed in the current DSM-5 criteria for HD). Regardless, the current literature on excessive pornography use and hypersexuality diverge in many regards from those found in studies among patients seeking help for addictive disorders such as chemical dependency or among patients with impulse control problems such as pathological gamblers. Furthermore, our research on psychological profiles of hypersexual men, including those with pornography problems, failed to find evidence of elevations on addiction indices, but instead found characteristics common in populations with obsessive tendencies.^[7] These findings suggest that hypersexual patients with pornography problems may represent a distinct population and grouping these patterns of behavior with other addictive disorders constitutes a premature conclusion that lacks empirical support.

Hilton and Watts perspectives on pornographic activation of dopaminergic transmission in mesolimbic pathways of the nucleus accumbens, prefrontal cortex, and other brain regions associated with the pleasure reward system does

not offer meaningful insights given the variety of activities that engage this system. Watching the NCAA basketball play-offs will likely lead to similar neurochemical processes for many individuals. Some of us may even experience negative consequences in relation to viewing the play-offs and we may be willing to sacrifice important tasks in exchange for TV time. A few may even feel unable to resist the urge to view information online about the play-offs while at work despite possible violations of corporate policies about appropriate Internet use in the workplace. Are we to conclude that such patterns of behavior constitute an addictive disorder, given their potential relationship to activating dopaminergic transmission in the mesolimbic pathways? Alternatively, we prefer to clarify that substantial evidence suggests that dopamine release in these regions is not associated with a reward mechanism *per se*, but rather, it is part of an arousal process that alerts the brain to the presence of new or novel stimuli in the internal or external environment and such stimuli is not always associated with potential rewards.^[10] Subsequently, any release of dopamine in these brain regions in response to pornography exposure may very well be due to the novelty of the pornographic stimuli and would likely occur for individuals naïve to erotic content as well as seasoned consumers of such material. Regardless, it does not provide readers with any evidence that excessive pornography use is an addictive disorder.

It was unclear to us, and perhaps some of your readers, why Hilton and Watts elected to reference literature about increased Δ FosB in the nucleus accumbens in copulating laboratory rats. These hypersexual rats were engaged in relational sexual activities with female partners, not in autoeroticism in response to sexually-provocative stimuli. Although the rodent study is interesting, we dispute the notion that it is analogous to humans excessively masturbating to pornography and thus the generalizations of the results cited by Hilton and Watts are questionable. Furthermore, the degree of Δ FosB induction in the nucleus accumbens in response to the natural rewards (e.g., sex) was significantly less than that observed in studies of drug rewards suggesting possible differences, not similarities, between drug addiction and sexual activity. Additionally, the significance of Δ FosB in the accumbens appeared to be limited in its effects where sexually naïve rats required fewer intromissions for ejaculation. Notably, cellular changes associated with increased Δ FosB are also found in cells exposed to a wide variety of stimuli unrelated to pleasure or reward behaviors. For example, stressors, sensory stimuli involved in learning, and evoked memory have been associated with such changes.^[4] Given the fact that there are no human studies on Δ FosB in patients with excessive pornography problems and generalizing research from animal studies in order to provide evidence of biological

parallels between addictive disorders and pornography problems is once again, speculative not scientific.

A final concern related to the perspectives of Hilton and Watts is the lack of clarity about what is meant by the term *addiction*. Our research team, along with others, have reported elsewhere^[7-10] on various aspects of hypersexuality and excessive pornography consumption that diverge from commonly held ideas regarding persons addicted to substances.^[11] The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR)^[1] completely avoids the term, instead referring to Substance-Related Disorders. By design, problematic behavioral patterns are treated elsewhere in the DSM. In the forthcoming DSM-5, a new category of HD is under consideration for possible inclusion and our research team is currently conducting an independent DSM-5 field trial of the proposed HD criteria to determine the validity of the construct the whether it can reliably be diagnosed. Hilton and Watts statement on this matter may be somewhat misleading to your readers. They state that the forthcoming DSM-5 “contains in this new addition the diagnosis of HD, which includes problematic, compulsive pornography use.” As a point of clarification, the decision whether or not to include HD as a disorder has not yet been made, but it is worth noting that the definitions under study intentionally do not include allusions to addictions, compulsions, or obsessions. Thus, although for some it is common to speak of pornography addiction or other sexual addiction, the lack of convergence of findings has led a growing number to take a more modest and careful position, wherein the connections to other classes of excessive behavior patterns are still under study. Further, delineation of what constitutes an addiction has no agreed-upon standard. Thus, it becomes particularly problematic that Hilton and Watts made no effort to clarify what definition they use and why the term as they use it applies to the participants in the studies they cite such as references to obese subjects as having a “natural endogenous addiction,” even though subjects were screened to be free of psychiatric disorders, including eating disorders.

Despite our criticism of their work, we are encouraged that Hilton and Watts have made an attempt to bring increased awareness to patients exhibiting problems with excessive pornography consumption. We agree, and have published findings demonstrating, that such patterns of behavior have been associated with numerous negative consequences including attachment ruptures in romantic relationships, loss of employment, and psychological distress. Yet much remains to be learned about patients seeking help for hypersexual behavior and excessive pornography problems. Neuroscience has the potential to offer meaningful contributions to our understanding of this phenomenon but such research is lacking at this time. The tone and content of the Hilton

and Watts article misleads readers to believe there is strong and convincing evidence based on neuroscientific research that excessive pornography problems constitute an addictive disorder causing brain abnormalities and cortical atrophy paralleling those found in substance abuse. Such assertions are speculative and unsupported by the studies cited by Hilton and Watts. Even if future research substantiates such claims, it is highly unlikely that such results will be generalized to all patients with excessive pornography problems given the consistent finding of heterogeneity in the characteristics of this population. We believe that addiction models may limit our understanding of this population and likely offer too simplistic a view of the vast array of complex issues encountered by patients with hypersexuality and pornography problems. In the interim, current research offers little support for conceptualizing excessive pornography problems as an addictive disorder. Research on tolerance or withdrawal, genetic associations, and neuroimaging in hypersexual patients with pornography problems are non-existent at this time. Although excessive pornography problems are part of the current proposed criteria for classification of HD in the forthcoming DSM-5, the field trial results have not been published and it is unclear whether such classification is valid or if it can be reliably diagnosed. Although the perspectives of Hilton and Watts may be appealing to some, we caution your readers in using their article to support or substantiate excessive pornography use as an addictive disorder based on the findings they attribute to neuroscience research. Collectively, their errors are egregious and detract from, rather than support, serious hypotheses for future research. In our own work with these patients, at least for those who seek treatment, the frequently attendant dysfunction in occupational, social, and other important activities, is sufficiently negative on its own, creating true dysfunction and significant clinical distress. We see no reason to exaggerate the known risks by suggesting

that excessive pornography consumption leads to brain damage or other neuropathology. Admittedly, some are prone to dismiss pornography use of any kind as a natural outgrowth of human sexuality; however, those who study and work with these extreme cases are well aware of the difficulties encountered by these individuals, including their sense of frustration about the inability to reduce or stop their problematic behaviors despite negative consequences. We look forward to future work offering empirically derived perspectives on these conditions, including the associated neurological correlates, but preferably insights that remain within the scope of what the research data supports.

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Commentary on: Neuroscience research fails to support claims that excessive pornography consumption causes brain damage

Perhaps the most startling aspect of the response to our editorial is the lack of understanding, perspective, or acknowledgment that there is a growing and credible body of research strongly supporting the existence of natural addiction, which encompasses pornography addiction. It is apparent the authors have rejected this premise of natural addiction that leading addiction neurobiologists continue to support, and therefore it is not surprising that they would view pornography addiction with skepticism.

Particularly noteworthy is their lack of awareness of the growing evidence of Δ FosB and its role as a molecular switch in addictive states, both drug and natural. For an understanding of the current perspective on Δ FosB, Dr. Eric Nestler's review paper published in the *Philosophical Transactions of the Royal Society* is most helpful. This paper was published in the issue titled "The Neurobiology of Addiction – new vistas," in summary of a discussion meeting of prominent addiction neurobiologists.^[24]

Because of confusion the commenters may have created with their comments, some of the main points of Nestler's paper, and even more recent work on Δ FosB in relation to sexuality will be reviewed in this response.

Δ FosB is a member of the Fos family transcription factors.^[24] Fos family proteins are induced by administration of drugs of abuse. These proteins, in general, are released and degraded quickly, with their point of action focusing on reward areas such as the nucleus accumbens and the dorsal striatum. They are unstable, and are gone within hours.

Δ FosB differs from other members of the Fos family in that it accumulates with drug abuse, across the spectrum of drugs of abuse.^[19] Thus Δ FosB continues to exert changes in gene expression even during periods of drug withdrawal. Nestler and others have proposed that Δ FosB is a "sustained 'molecular switch' that helps initiate and maintain an addicted state."^[24]

Bitransgenic mice can be induced to selectively produce Δ FosB in the dynorphin-containing medium spiny neurons, which is specifically where drugs of abuse are thought to exert their effect. They show an exaggerated behavioral response to drugs of abuse, as if they had been chronically given the drug, as compared to mice who do not inherently overexpress Δ FosB; this phenomenon is seen both with cocaine^[14] and opioids.^[33] Studies with mice which are induced to overexpress Δ FosB in a viral-mediated gene transfer model have replicated this response.^[33] In other words, drug naïve animals overexpressing Δ FosB behave as if they are already addicted.

So how does this relate to the existence of natural addiction? The purpose of the nucleus accumbens is integral in salience of natural reward behaviors such as food, sex and rewarding interpersonal interactions. Nestler discusses the evidence supporting a role for Δ FosB in the nucleus accumbens in "so-called natural addictions: e.g., pathological overeating, gambling, exercise, sexual addiction."^[24] Significantly, Δ FosB accumulates in the nucleus accumbens in mice that exhibit higher levels of wheel running than normal, a model for exercise addiction.^[32] This also occurs after chronic over consumption of sucrose or sex.^[30] The viral-mediated mice overexpressing Δ FosB referred to earlier which exhibit behavior consistent with drug addiction also "increases drive and consumption for these natural rewards."^[23] Blocking the action of Δ FosB in these animals with an antagonist (dominant negative Jun protein) prevents overconsumption of these natural rewards. Dr. Nestler summarizes: "These findings suggest that Δ FosB in this brain region sensitizes animals not only for drug rewards but for natural rewards as well, and may contribute to a state of natural addiction."^[24]

Other recent studies strengthen the premise that sexuality is strongly tied to Δ FosB, a marker of addiction. For instance, Δ FosB overexpression in the nucleus accumbens has been shown to enhance sexual reward in female Syrian hamsters.^[18] Pitchers *et al.*, published a paper last year demonstrating that sexual experience causes an accumulation of Δ FosB in limbic-associated brain regions, such as the nucleus accumbens core and shell, the medial prefrontal cortex, the ventral tegmental area and the caudate putamen. Significantly, "blocking Δ FosB attenuated experience-induced facilitation of sexual motivation and performance, while *overexpression of Δ FosB in the nucleus accumbens caused an enhanced facilitation of sexual behavior, in terms of increased sexual performance with less experience.*"^[27] (emphasis added) This is most interesting when considered in light of Nestler's comment in the Royal Society paper, that the level of Δ FosB may become a "biomarker to assess the state of activation of an individual's reward circuitry, as well as the degree to which an individual is 'addicted', both during the development of an addiction and its gradual waning during extended withdrawal or treatment."^[27] These perspectives are clearly supportive of a neurobiological marker for sexual addiction. Pitchers *et al.*, work summarizes "...these data are the first to indicate an obligatory role of Δ FosB in the acquisition of experience-induced facilitation of sexual behavior... *We propose that this long-term expression of facilitated behavior represents a form of memory for natural reward; hence, Δ FosB in NAc is a mediator of reward memory.*"^[16] (emphasis added) Another paper from Pitchers *et al.*, last year established that physiologic sexual experience, interrupted by a period of abstinence with resumption of sexual behavior actually increases numbers of dendrites and dendritic spines in medium spiny neurons. Again they summarize, "The structural alterations induced by sexual experience and subsequent abstinence resemble those seen after repeated exposure to psychostimulants... *the data presented here demonstrate that sexual behavior – a natural rewarding stimulus – can induce long-lasting neuroadaptation in the mesolimbic system.* Our findings suggest that behavioral plasticity, particularly a sensitized locomotor response, is an immediate and long-term outcome of sexual experience."^[26] (emphasis added)

Another metabolic parameter strongly supporting a neurobiological basis for natural addiction is found in studies examining dopamine receptor depletion. Wang *et al.*, demonstrated dopamine (D2) receptor downgrading with obesity similar to that seen in drug addiction, and the levels correlated with BMI.^[31] An animal study recently published by Johnson and Kenny found that rats exposed to "palatable, energy-dense food develop a profound state of reward hyposensitivity and compulsive-like eating. The maladaptive behavioral

responses in obese rats probably arise from diet-induced deficits in striatal D2R signaling. Overconsumption of drugs of abuse similarly decreases striatal D2 receptor density, induces a profound state of reward hypofunction, and triggers the emergence of compulsive-like drug taking behaviors. *Our findings therefore support previous work in indicating that obesity and drug addiction may arise from similar neuroadaptive responses in brain reward circuits.*^[20] (emphasis added)

Pathologic gambling has demonstrated decreased activation in the mesolimbic reward system as compared to controls,^[28] and administration of dopamine to patients with Parkinson's disease has iatrogenically induced both hypersexuality and pathological gambling.^[13] Reuter *et al.*, summarizes "...a decrease activation of the ventral striatum, which is a hallmark of drug addiction, and decreased VMPFC activation, which is related to impaired impulse control, *favor the view that pathological gambling is a non-substance-related addiction.*"^[28] (emphasis added)

In our opinion the seminal work on ΔFosB by Nestle and others is pioneering, and changes the landscape in considering aspects of neuromodulation as related to natural addiction. It casts a biologic light on all aspects of this concept. We feel this data is confirmatory with regard to the existence of neuromodulation in natural addiction, especially considering the recent work exploring the relationship between ΔFosB and sexuality. The points we made on the VBM studies regarding hypoplasia of neuronal populations associated with reward centers emanated from this perspective. These correlative papers concluded that atrophy occurred in four different addictive states, two drug and two natural. Certainly the authors of these papers were not addressing causation, although the cocaine^[14] and obesity^[25] papers both recognize that *the areas of atrophy are associated with reward pathways*. Inherency, which certainly may be a factor, does not explain the reversibility, with recovery, of selective atrophy associated with the use of methamphetamine.^[22]

Our premise is that selective atrophy of cortical areas associated with reward pathways may be viewed in a neuromodulatory light, given current research confirming neuroplasticity in overindulgence in natural rewards, specifically sexuality. The inability of those challenging our conclusions to understand even the most basic of these concepts is illustrated by their comments about specific processes. For instance, their dismissal of the importance of ΔFosB is illustrated by their manifest lack of insight into the research concerning this protein. While mentioning that stress can induce ΔFosB, they fail to understand that the pattern of expression with stress extends broadly across both dynorphin+ and enkephalin+ medium spiny neurons and is not confined

to dynorphin+ medium spiny neurons as it is in the overexpression associated with overconsumption of natural rewards and with drug addiction.^[24] The following comment is illustrative of their lack of understanding the importance of ΔFosB as a molecular switch in addiction: "That's great news for the sexually inexperienced rats! Put your name on the list for more ΔFosB and your sexual performance will be on par with more experienced rats." They correctly point out that atrophy is associated with aging, and may be affected by comorbidities, neurotoxicity, and the like, but fail to appreciate selective atrophy in cortical areas associated with reward centers. The concept of upstream neuronal atresia as illustrated in figure 2 in the Nestler paper, focusing on a common pathway for drug and natural addiction,^[23] may be an important mediator in this process. This atresia is associated with decreased dopaminergic input into the NA from the VTA, and with decreased glutamergic input from the cortex, both being associated with an increase in ΔFosB in the medium spiny neuron. The cortex can atrophy in response to decreased downstream stimuli.^[21] That there is a functional frontal deficit in addiction is the hallmark, whether drug induced or naturally induced, and the hypofrontal syndrome displayed is similar to that seen in traumatic brain injury.^[16] Another recently reported example of selective cortical atrophy in reward-associated regions in adolescents manifesting Internet "addiction" is of interest in this context.^[34]

While a role for inherency is obvious, to deny any role for causation is to envision a world of selectively preatrophied individuals destined to act out in addiction. We find this premise much less plausible than at least a partial role for causation given what we consider confirmatory data with regard to the role of ΔFosB in the induction and then perpetuation of addictive states.

Whether or not future structural studies confirm our premise that at least partial causation is supported in this regard, the question of neuromodulation with regard to natural addiction is independently supported by the ΔFosB studies, and strengthened by the D2R and fMRI studies on obesity and pathological gambling previously cited. Particularly convincing with regard to a causation role of subsequent addictive behavior after induction is the previously cited work on bitransgenic and virally induced mice which *behave as if addicted*, both in natural and drug addiction, overexpression of ΔFosB being the only variable.^[24]

As stated in our editorial, no less that the head of the National Institute for Drug Abuse (NIDA), Dr. Nora Volkow, called, in the journal Science, for changing the name of the NIDA to the National Institute on Diseases of Addiction, to "encompass addictions such as pornography, gambling, and food...She would like

to send the message that we should look at the whole field.”^[15] Dr. Eric Nestler at Mount Sinai uses the phrase “natural addiction” in describing what he calls “pathological overeating, pathological gambling, and sexual addictions.” Dr. Howard Shaffer at Harvard said, “I had great difficulty with my own colleagues when I suggested that a lot of addiction is the result of experience...” and continued, “Although it is possible to debate whether we should include substance or process addictions within the kingdom of addiction, technically there is little choice.”^[29] When scientists such as Drs. Volkow, Nestler and Shaffer use the word “addiction” with regard to processes such as food and sex, they are not using this term lightly. Neurobiologists understand that this word has neuromodulatory implication.

For Reid *et al.*, to suggest to the reader that it is irresponsible to use the word addiction in this context, we believe, is irresponsible. They seem to ignore substantial evidence that natural addictions do indeed exist, and that specifically sexual addiction can induce neuroplasticity. They fail to grasp the significance of neuromodulation in sexuality when they state, “...current research offers little support for conceptualizing excessive pornography problems as an addictive disorder.” If natural addiction exists, as we and others believe, then it strains credibility to argue that patients struggling with pornography addiction like the one described by Bostwick and Buccini are not prime examples.^[12]

Recently a colleague experienced in functional neurosurgery was visiting with another similarly experienced neurosurgeon. This latter surgeon opined that the next field which might be addressed through functional neurosurgery may be addiction. However, unlikely it appears now to some, we envision a day when drug addiction, severe obesity and sexual addictions with legal implications might be treated with limbic targeting, hence the relevance to our present subject.

We found the perspective and tone of these authors disappointing, in that they are desperately dismissive of any neurobiologic evidence supporting natural models of addiction. Particularly remarkable, in our opinion, is their blatant disregard for the context which leading neurobiologists view not only Δ FosB, but any data which supports neuromodulation in natural addiction. In refutation, the only evidence they cite is their own work, which is behavioral in nature, rather than neurobiologically based. Their perspective is permeated with an apologetic bias against any study suggesting pathologic neuromodulation on a macro or micro scale with regard to natural addiction.

As of this writing a report out of Yale published in the Archives of General Psychiatry titled “Neural Correlates of Food Addiction” describes activation in reward pathways using fMRI as being similar in obese individuals and in

those with substance addiction. They summarize, “the current findings suggest that food *addiction* is associated with reward-related neural activation that is frequently implicated in substance dependence. To our knowledge, this is the first study to link indicators of *addictive eating behavior with a specific pattern of neural activation*.”^[17] (emphasis added) Emerging data continues to strengthen and support the concept of neuromodulation with natural addiction.

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EXHIBIT 17

Pornography and Public Health

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8

The Effects of Pornography on Youth

As unimaginable as it might seem today, comic books were once declared a public health crisis.¹ In the 1940s, comic books of all varieties became popular with children and adolescents. The US Senate held televised hearings on the violence and sex depicted in comic books and whether it might be influencing pre-teen behavior problems.¹ In the wake of the Senate hearings, bills prohibiting the distribution of comics depicting illicit sex, physical torture, or physical violence were passed, as well as restrictions on the sale of “lurid” comic books to those younger than 18 years old.² And a regulatory group, the Comics Code Authority, was established to “enforce strict guidelines of morality, decency, and good prevailing over evil.”³ Today, the idea that comic books could cause an epidemic of violence and crime might strike most people as implausible. But there are lessons to be learned from the moral panics of prior eras with regard to how we approach present-day concerns over youth exposure to the content of video games, Internet and entertainment content, and pornography.⁴

The bulk of the evidence on the influence of mainstream online pornography on youth suggests that there is, on average, a negative effect, and that there may be particular reasons for concern if youth have little other health-promoting information or few caring adults in conversation with them about sex to offset what they see. The job of public health professionals, therefore, is to determine how best to safeguard underage youth from the potential harms of pornography while pushing back against nonscientific claims about its effects.

Is It Illegal for Youth to See Pornography?

In the United States, according to federal law, it is illegal to show pornography to people younger than 16 years old.⁵ There may also be state laws that layer on additional prohibitions, such as in the state of California, where it is not legal to send sexually explicit material to a person less than 18 years old.⁶ Importantly, according to federal law, if someone younger than 16 years old

shows pornography, the one in the wrong is the person or entity that showed the pornography to the child—not the child.

Prevalence of Use

In 2016, Peter and Valkenburg published a review of 20 years of research on adolescents and pornography.⁷ Contained within the review is a table presenting 43 research studies conducted with samples of youth from 19 nations, including the United States, Taiwan, Korea, Italy, the Netherlands, Australia, Israel, Nigeria, Sweden, Greece, Switzerland, Hong Kong, China, Morocco, Belgium, Ethiopia, Malaysia, the Czech Republic, and Cambodia. The rates range from a low of 1% of Swiss girls 16 to 20 years old having experienced intentional Internet pornography use in the past month (see Luder et al. 2011),⁸ to 98% of 16- to 19-year-old German boys ever having seen a pornographic video or film (see Weber et al. 2012).⁹ For the United States, rates ranged from a low of 7% of a nationally representative sample of 10- to 17-year-old youth intentionally viewing pornography in non-Internet media in the past year,¹⁰ to 83% of high school boys in California ever having seen a pornographic video.¹¹ The problem with research on the prevalence of adolescents’ pornography use or exposure is that inconsistent definitions of pornography, use, the ages of youth in the sample, and the time period of the research mean that estimates vary widely.

To characterize the prevalence of pornography “exposure” (i.e., viewing) among younger children, one probability-based nationally representative estimate is available from the Youth Internet Safety Survey (YISS), a nationally representative study of children 10 to 17 years old who used the Internet.¹⁰ In 2000, 15% of this sample reported that they had purposely sought out and seen pornography, either on the Internet or in offline sources like magazines, in the past year.¹⁰ The same survey was repeated in 2005 and 2010.¹² In 2010, 13% of US youth 10 to 17 years old reported Internet pornography exposure in the past year.¹² This study also found that there was a modest increase in the percentage of youth who reported internet pornography exposure between 2000 and 2010, and virtually all of the increase took place in the first 5 years.¹² Interestingly, the increases were primarily among youth 16 to 17 years old. In 2010, only 2% of youth 10 to 11 years old reported having seen pornography in the past year.¹²

A different nationally representative study that collected data in 2010–2011 from 14- to 21-year-old youth found that, among those who had used the

Internet in the past 6 months, 37% reported seeing pornography in the past year, where pornography was defined as an X-rated movie, magazine, or "adult" website.¹³ Of those who had seen pornography, 85% had seen nonviolent pornography and 15% had seen violent pornography, defined as a movie, magazine, or adult website that showed a person being physically hurt by another person while they were doing something sexual.¹³ Overall, only 5% of this nationally representative sample of youth had seen violent pornography in the past year.¹³ This same study found that those who had seen violent pornography were at substantially increased risk for having perpetrated forced sexual contact or coerced sex, as well—in fact, those who saw violent pornography were five times more likely than those who had not to report any sexual violence perpetration.¹³

Importantly, youth may be as likely to see sexual content in nonpornographic TV shows and movies as they are to see it on the Internet. The Growing Up with Media Study collected data from 1,058 youth 14 to 21 years old in 2010 to 2012.¹⁴ Exposure to sexual media was elicited via five separate questions covering TV and movies, music, video games, and websites that show cartoons and real people. Youth were asked to report on media that showed people "kissing, fondling, or having sex." The study revealed that 32% of youth reported that many, almost all, or all of the TV shows and movies they watched contained sexual content, whereas 5% of the youth said that many, almost all, or all of the websites they visited depicted sexual scenes. This study tells us that if we are worried about youth exposure to sexual content in media, focusing only on pornography, pornography-specific websites, or the pornography industry isn't consistent with a public health approach.

The percentage of adolescents who have viewed sexually explicit media online in the past year may be increasing because of the ever-widening availability of Internet-connected devices and high-speed Internet. It makes intuitive sense that more and more youth have access to unrestricted time on the Internet—but it's an assumption, and as of yet, largely untested. For what it's worth, as long ago as 1971, a survey of US college students found that 95% of males and 43% of females reported that they at least sometimes (or fairly or very often) looked at pornographic photos, suggesting that looking at sexually explicit media was a common youth behavior long before the advent of the Internet.^{15,16}

The Age of First Exposure to Pornography

People worry that the younger a person is when he or she first sees pornography, the more harm that is done to them. The idea is that the younger a

person is, the less capable they are of understanding what they are seeing, and the more likely they are to be traumatized or to develop unhealthy sexual scripts.¹⁷ A number of studies have investigated the average age of children's first exposure to pornography. Taken together, it seems that most have found that the average age of first pornography exposure tends to be between 10 and 15 years old for most teenagers, and several studies support the idea that the average age of first pornography exposure is now 11 to 12 years old (see Table 8.1). Given that the average age of heterosexual sexual intercourse debut for US adolescents is 16 to 17 years old, the fact that 11- to 12-year-old youth are seeking out information about sex and sexual images makes sense from a developmental perspective (see Table 8.1).¹⁸

Table 8.1. Studies that provide estimates of the age of first pornography exposure

Author and Date	Sample and Year That Data Were Collected	Average Age of First Exposure to Pornography (Years)
Wilson and Abelson 1973 (as reported by Bryant and Brown 1989 ¹⁶)	National probability sample of 2,486 US adults, ages 21 years and older, 1970–1971	Boys: 17 Girls: 20
Sabina et al. 2008 ⁷⁸	College students in New England, 2006	Boys: 14.3 Girls: 14.8
Romito and Beltramini 2011 ⁴²	Northeastern Italian high school students and young adults, 2007	Boys: 43% ages 13 to 15 Girls: 35% ages 13 to 15
Sinković et al. 2013 ⁷⁹	Croatian young adults, 2010	Boys: 11.5 Girls: 13.5
Sun et al. 2017 ⁸⁰	German female college students 18 years old and older, 2011–2012	Girls: 31.5% between the ages of 10 and 12, and 31% between the ages of 13 and 15
Wright and Štulhofer 2019 ⁸¹	Study of 16-year-olds in Croatia, 2015	Boys: 11.45 Girls: 12.45
Lim et al. 2017 ¹⁶	Australian youth 15 to 29 years old, 2015	Boys: 13 Girls: 16
Nelson et al. 2019 ⁸²	Convenience sample of gay youth in the United States, 14 to 17 years old, 2017	Boys: 12
Laemmle-Ruff et al. 2019 ⁸³	Convenience sample of people who used health and fitness social media, 19 to 30 years old, 2016	All: 16
Herbenick et al. 2020 ⁸⁴	US probability sample of adults 18 to 60 years old, 2016	Boys: 13.8 Girls: 17.8

What Do Adolescents See When They Are Exposed to Pornography?

Because online pornography sites like Pornhub do not require age or identity verification, and because pornography may be embedded in other platforms to which youth have access (e.g., Twitter), underage youth can see any genre of pornography. What they are most likely to see by chance, or what they choose to see, is a question of interest that a handful of studies have investigated. For example, in the United States, a cross-sectional study of a convenience sample of 72 US-based, urban-residing, economically disadvantaged, and primarily Black and Hispanic youth found that youth were most likely to report watching porn with the tags lesbian/bisexual (44%), big butt/big tits (43%), Ebony/Latina (39%), Blowjob (21%), Threesome (16%), Teen (13%), and Group sex (11%).¹⁹ An anonymous online survey study of young, heterosexual, Australian youth found that 97% of the sample reported seeing “men’s pleasure” in pornography they had seen in the past year, 91% reported seeing men being dominant, and 77% had seen violence in pornography. In addition, 89% reported they had seen romance and/or affection in pornography, 96% reported seeing a focus on women’s pleasure, and 74% had seen women portrayed as dominant. Approximately 43% had seen violence or aggression toward a woman that appeared nonconsensual, and 18% had seen violence or aggression toward a man that appeared nonconsensual.²⁰

A longitudinal study of Dutch adolescents 13 to 17 years old, conducted in 2013–2014, found that 20% of the sample had encountered “affection-themed” and “dominance-themed” pornography, while 10% indicated that they had seen “violence-themed” pornography.²¹ Older adolescents in the sample were more likely to have been exposed to dominance-themed pornography, while younger adolescents were more likely to have been exposed to affection-themed pornography.²¹ Adolescents who had a hyper gender orientation (i.e., adhered strongly to hypermasculine or hyperfeminine norms related to gender) were more likely to choose to watch violence-themed pornography.²¹

Risk Factors for the Use of Sexually Explicit Media in Adolescence

Numerous studies, both cross-sectional and longitudinal, have identified risk factors and some protective factors for adolescent and young adult pornography consumption. These have been summarized in multiple review articles,

including those by Koletić (2017) and Peter and Valkenburg (2016).^{7,22} Public health practitioners and researchers often array risk and protective factors according to the “levels” of the social-ecological model.²³ The levels represent spheres of influence on a person’s development, and the fact that each is nested inside the next is a reminder that there are synergistic and dynamic connections between factors across the levels. When it comes to what makes certain youth more or less likely to use pornography, there are factors that will affect their likelihood of use at the level of their own individual biology or psychology, factors that pertain to their family of origin, factors related to peers, and factors related to their connection to school. There are also, of course, factors related to the neighborhood, society, and culture in which they live—but these are more difficult to study and have not, to my knowledge, been studied relative to youth pornography use yet (see Figure 8.1).

Many of the risk factors for pornography use are similar to risk factors for what are commonly called other “adolescent problem behaviors” (see Figure 8.1).²⁴ Research has confirmed that there is a constellation of behaviors that includes problem drinking, cannabis use, delinquent-type behavior, and precocious sexual intercourse that tend to predict adolescent health problems.²⁵ Adolescent health

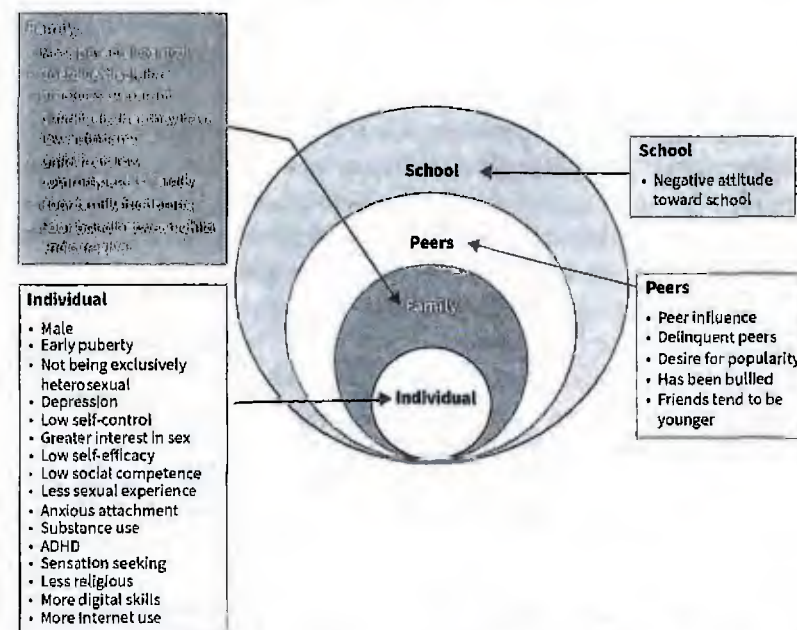


Figure 8.1. Risk factors for youth pornography use according to four levels of the social-ecological model.

researchers have noted that there are some common precursors to all of these adolescent problem behaviors, and many of them also appear to be associated with adolescent pornography use (Figure 8.1). These include being male,^{10,26–29} experiencing early puberty,^{30–33} depression,¹⁰ low self-control,³⁴ greater interest in sex,^{35,36} low self-efficacy,^{37,38} low social competence,³⁸ having less sexual experience,^{39,40} anxious attachment,⁴¹ substance use,^{10,42} being less religious,⁴³ having more digital (online) skills,⁴⁴ being a more frequent Internet user,⁴⁰ being a rule-breaker,²⁹ not being exclusively heterosexual,^{45,46} and sensation seeking.^{8,32} A study of adults found that there may also be an association between ADHD and problematic pornography use.⁴⁷ Household functioning,³⁸ including parenting style (i.e., coercive discipline practices),¹⁰ parental monitoring of the child's activities,³³ the child's feeling less autonomy because of parenting practices,²⁹ the relationship between parent or guardian and the child,^{10,48,49} and parent-to-child abuse⁴² matter for most adolescent problem behaviors and for pornography use, as well. When one is an adolescent, what one's peers do, say, or think also tends to be highly influential and can have a strong influence on behavior,⁹ as well as on what one perceives one should do to be more popular among peers.⁵⁰ Being engaged in school activities and generally positively bonded with one's school is also associated with healthier behavior^{48,51} or less pornography use. One caveat to this presentation of risk and protective factors is that there are also some factors about which they are conflicting findings regarding pornography. For example, some studies find that religiosity is protective against pornography use,⁴³ while others have found no influence of religiosity.^{21,31}

Considering the risk and protective factors for youth pornography use that have been identified, and their similarity to risk and protective factors for other adolescent problem behaviors, is it possible to identify a profile of an underage pornography user? One could say that, on average, an adolescent male with high sexual interest, with good online skills and access to the Internet, who is not getting along well with parents or feels overly controlled by parents, and who isn't involved in school activities is more likely to be viewing pornography than adolescents in general—but because the relative risks for each of these correlates tends to be small, the profile isn't precise. And much of the information that we have about so-called risk factors is actually derived from cross-sectional studies, so causality isn't certain.

Consequences

Many people want to know how pornography use affects youth. The best available evidence suggests that it matters who the youth are in terms of

their predisposing risk factors, what they are watching, how much they are watching, why they are watching it, in what context (with a partner, with friends, or alone), how they feel about watching it (e.g., guilty, curious, aroused, bored), and what other sources of information they have about sex, sexuality, and relationships—in other words, are their parents communicating with them (and about what), are they getting comprehensive sex education in school, what other kinds of media do they consume, and what are the messages that they are getting from that?

I like to organize what we know from the research literature in a table that keeps track of each outcome that has been assessed as a possible correlate (either cross-sectional or longitudinal) of pornography use in people 11 to 24 years old. The table can get complicated quickly because in some research studies the authors have found support for a particular variable only for a subset of their respondents (e.g., girls but not boys, or young boys but not older boys), or only in certain situations (e.g., only if parental monitoring is absent, or only if they had preexisting violent tendencies). In some cases, authors have examined a particular outcome relative to pornography use and not found support for the association at all (see Table 8.2).

Table 8.2 lacks details about findings. For example, at least one study has found that the association between pornography exposure and interpersonal aggression is stronger when youth were using violent (but not nonviolent) pornography: Ybarra and Thompson (2018) found that exposure to violent pornography was associated with a fourfold increased odds of sexual violence perpetration by youth.⁵² It is also important to note that there are some outcomes for which there are mixed results. Take, for example, academic achievement. One longitudinal research study found that pornography use was associated with less academic achievement, but a second study did not find any association.^{32,53} On the whole, the study of the impact of pornography use on youth remains an emerging science, and what is known remains in a nascent stage.

As frustrating as it is to journalists, activists, and parents, it's genuinely hard to know, conclusively, exactly what pornography is doing to kids who see it, and whether the risks can be offset with helpful supports like parent-child conversations about sex or school-based education. That said, if we had to draw inferences based on what we do know, all signs point to the idea that mainstream online pornography appears to negatively influence youth in several ways. There is longitudinal evidence—suggestive of a causal relationship—that pornography may negatively influence attitudes toward women,³⁰ that it may increase the tendency of youth to view women as sex objects,⁵⁴ and that it may cause depression,^{55–57} anxiety,^{57,58} decreases in well-being,⁵⁷ reduced

Table 8.2. Selected studies that provide information about correlates of adolescent pornography consumption, by study design

Factor	Cross-Sectional Evidence	Longitudinal Evidence
Attitudes		
Rape myth acceptance	Maas and Dewey 2018 ⁸⁵	—
Resistance to the #MeToo movement	Maes et al. 2019 ⁸⁶	—
Attitudes toward women or gender attitudes	Stanley et al. 2018 ⁸⁷	Brown and L'Engle 2009 ³⁰ Peter and Valkenburg 2011 ^{88,a}
Self-objectification	Vandenbosch and Eggermont 2013 ^{63,c}	—
Viewing women as sex objects	Peter and Valkenburg 2007 ⁸⁹	Peter and Valkenburg 2009a ²⁰
Depression	—	Ma 2019 ⁵⁵ Mattebo et al. 2018 ⁵⁶ Kohut and Štulhofer 2018 ^{57,b} Kohut and Štulhofer 2018 ^{57,b}
Well-being		
Mental health problems	Lim et al. 2017 ⁴⁶	
Anxiety	Morrison et al. 2004 ^{91,d}	Kohut and Štulhofer 2018 ^{57,c}
Self-esteem	Morrison et al. 2004 ^{91,d}	Doornwaard et al. 2014 ⁵⁸ Kohut and Štulhofer, 2018 ^{57,b,d} Vandenbosch et al. 2018 ⁵⁹
More intense sexual performance orientation	—	
Less sexual satisfaction	—	Milas et al. 2019 ^{92,a} Peter and Valkenburg 2009b ⁹³ Doornwaard et al. 2014 ^{58,c} van Oosten (2016) ⁹⁴ Peter and Valkenburg 2010 ⁹⁵
Sexual uncertainty	—	Brown and L'Engle 2009 ^{30,c} Doornwaard et al. 2015 ^{97,c} Ma 2019 ⁵⁵ Baams et al. 2015 ⁶⁸
More permissive sexual norms	Lo and Wei 2005 ²⁶ Braun-Courville and Rojas 2009 ⁹⁶ Peter and Valkenburg 2006 ²⁷ Peter and Valkenburg 2008 ⁶²	Peter and Valkenburg 2010b ⁹⁸
Perceiving pornography to be realistic and/or unrealistic attitudes about sex	Tsitsika et al. 2009 ²⁸ Peter and Valkenburg 2006 ³¹	
Sexual preoccupation	Donevan and Mattebo 2017 ⁹⁹	Peter and Valkenburg 2008 ⁶²
Behaviors		
Sexual behaviors		
Sexual debut	Svedin et al. 2011 ^{100,c} Lim et al. 2017 ⁴⁶	Vandenbosch and Eggermont 2013 ⁶³ Cheng et al. 2014 ⁶⁴ Brown and L'Engle 2009 ³⁰
Condom non-use	Nelson et al. 2019 ⁸² Wright et al. 2019 ¹⁰¹	—

Table 8.2. Continued

Factor	Cross-Sectional Evidence	Longitudinal Evidence
HIV risk behaviors, including condom non-use, use of intravenous drugs, sex with a bisexual partner; multiple concurrent partners	Sinković et al. 2013 ⁷⁹ Lim et al. 2017 ^{46,a}	Maas et al. 2019 ⁶⁵ Peter and Valkenburg 2011a ^{88,a}
Sexting	Tomčić et al. 2017 ¹⁰² Stanley et al. 2018 ⁸⁷	—
Sexual behavior	Mattebo et al. 2014 ¹⁰³ Martyniuk et al. 2019 ¹⁰⁴ Rothman and Adhia 2016 ¹⁹	Doornwaard et al. 2015 ⁵⁸ Hennessy et al. 2009 ¹⁰⁵
Group sex	Haggstron-Nordin et al. 2005 ^{106,c} Rothman et al. 2012 ^{107,b}	—
Anal sex	Mattebo et al. 2016 ^{108,b} Haggstron-Nordin et al. 2005 ^{106,c} Lim et al. 2017 ⁴⁶	—
Number of sexual partners	Maas and Dewey 2018 ⁸⁵ Morrison et al. 2004 ^{91,b}	—
Casual sex and one-night stands	Mattebo et al. 2013 ^{40,c}	—
More or compulsive pornography use	Donevan and Mattebo 2017 ⁹⁹	Peter and Valkenburg 2009 ⁵⁴ Doornwaard et al. 2016 ¹⁰⁹ Mattebo et al. 2018 ⁵⁶
Aggressive behaviors		
Physical dating violence victimization	Rostad et al. 2019 ^{110,c} Rothman et al. 2012 ^{107,b} Rothman and Adhia 2016 ¹⁹	Maas et al. 2019 ⁶⁵
Physical dating violence perpetration	Rostad et al. 2019 ^{110,b}	—
Sexual violence victimization	Rostad et al. 2019 ¹¹⁰	Maas et al. 2019 ⁶⁵
Sexual aggression or harassment perpetration	Mikorski & Szymanski 2017 ¹¹¹ Tomčić et al. 2017 ^{102,a} Rostad et al. 2019 ^{110,c} Svedin et al. 2011 ^{100,c}	Ybarra and Thompson 2018 ⁵² Brown and L'Engle 2009 ^{30,c} Dawson et al. 2019 ^{112,a} Ybarra et al. 2011 ⁶⁶
Other behaviors		
Body monitoring	Maas and Dewey 2018 ⁸⁵	Doornwaard et al. 2014 ⁵⁸
Evaluating women's bodies	Mikorski and Szymanski 2017 ¹¹¹	
Less academic achievement	—	Beyens et al. 2015 ³² Šević et al. 2019 ^{53,a}
Problems with peers	Mattebo et al. 2013 ^{40,c}	—

Continued

Table 8.2. *Continued*

Factor	Cross-Sectional Evidence	Longitudinal Evidence
School truancy	Mattebo et al. 2013 ^{40,c} Svedin et al. 2011 ^{100,c}	—
Obesity	Mattebo et al. 2013 ^{40,c}	—
Use of oral tobacco	Mattebo et al. 2013 ^{40,c}	—
Use of alcohol	Mattebo et al. 2013 ^{40,c} Svedin et al. 2011 ^{100,c} Rothman and Adhia 2016 ¹⁹	—
Use of cannabis	Svedin et al. 2011 ^{100,c} Rothman and Adhia 2016 ¹⁹	—

^a Study found no support for an association with pornography use.

^b Association was for girls only.

^c Association was for boys only.

^d Pornography use was associated with better self-esteem or less anxiety.

self-esteem,^{57,58} a tendency to “perform” sex instead of engage in it authentically in real life,⁵⁹ a tendency to experience less sexual satisfaction in real life,^{58,60} a tendency to develop the incorrect perception that pornography is realistic,⁶¹ a tendency to become preoccupied with thought of sex,⁶² a likelihood to initiate sexual activity earlier in life than one might have otherwise,^{30,63,64} a tendency to engage in riskier sexual behaviors (such as condom non-use),^{30,63–65} a likelihood to experience unhealthy dating relationships,⁶⁵ a tendency to perpetrate and/or experience sexual violence,^{30,52,65,66} and concern about one body’s not being good enough.⁵⁸ There is also evidence to suggest that more frequent pornography viewing may be associated with what researchers have called more permissive sexual attitudes.^{30,55,67,68}

Sexting and So-Called Self-Produced Child Pornography

One concern that has emerged recently has been called self-produced child pornography (also called self-porn). When someone younger than 18 years old engages in sexting, or the production and/or dissemination of sexually explicit images of themselves, they are technically guilty of creating child pornography, since the subject of the imagery is a person under the legal age for consenting to be in pornography.⁶⁹ Specifically, Section 2256 of Title 18, United States Code, defines child pornography as any visual depiction of sexually explicit conduct involving someone less than 18 years old. The nonprofit

National Center for Missing and Exploited Children works with law enforcement on the Child Victim Identification Project, which entails reviewing sexually explicit images of children that are seized from sexual offenders in order to locate the victimized children. They have reported that a small but significant percentage of images seized from those collecting or trading child pornography were originally created by the minors themselves (14%), and that the percentage is increasing.^{70,71}

Sexting appears to be prevalent among US adolescents. A national survey found that in 2010–2011, 7% of youth 13 to 18 years old reported sending or showing someone sexual pictures of themselves during the past year in which they were nude or nearly nude.⁷² A recent meta-analysis found, on average, that 14.8% of adolescents had sent a sext, whereas 27.4% reported receiving sexts.^{73,74} The prevalence may be even higher among nonheterosexual adolescents.⁷⁵ A separate probability study of US adults 18 to 24 years old found that 47% of men and 48% of women in this age group had ever received nude or seminude of photos of someone.⁷⁶ There is recognition that consensual sexting may be an expected and even normative part of adolescent development, given that much romantic and sexual communication now happens on electronic devices, but there is recognition that it nevertheless may not be safe. Negative consequences can result from sexting, including that the images can be disseminated widely and without the consent of the adolescent who originally sent them.⁷³ Some research suggests that sexting is associated with stress and anxiety, although it is not clear if sexting causes stress and anxiety.⁷⁷ It might also be true that people who feel more stressed and anxious engage in more sexting for various reasons—perhaps to try to relieve stress, or in an anxious attempt to connect socially with others. Either way, paying increased attention to bolstering the mental health of those who sext is warranted.

Conclusions

It is not easy to disentangle the effects of pornography on youth from other types of sexual media, and without question any effects that have been identified are moderated by the type of pornography consumed, the frequency of exposure, predisposing factors in the youth exposed, and other situational factors. Nevertheless, there is a growing body of literature supporting the contention that youth online pornography exposure is associated, longitudinally, with a range of negative consequences. While it is not easy to prove causality, because even longitudinal associations may be confounded by other factors, the preponderance of evidence supports the idea that adolescent

sexual development can be altered by the adolescent's pornography viewing experiences and may require offsets, such as parental communication about pornography, comprehensive sex education in school, or other helpful interventions. Public health professionals have a reason to be concerned about the impact of pornography on children, adolescents, and young adults, and they have reason to take considered action.

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9

Pornography and Body Image

Most people alter their appearance in order to look more attractive to others. Whether it's using makeup, dieting, bulking up, choosing clothes that flatter one's body size and shape, coloring or styling one's hair, adorning oneself with feathers, beads, or other ornaments, wearing a corset or Spanx or shoulder pads, or engaging in piercing, tattooing, hair removal, or scarring—throughout history humans have expended energy and money to appear in a way that they believe will make them more beautiful to others. This makes good sense, because being perceived as beautiful and sexually attractive confers benefits. People who are perceived to be more attractive tend to achieve more education, are less likely to be seen as culpable when they commit a crime, are more likely to be offered jobs, earn more money on average over a lifetime, and tend to have more options for romantic and mating partners—and these advantages may extend longevity.^{1–4}

But where do people get their ideas about what will make them more beautiful to others? On the one hand, scientific research supports biological explanations that suggest that what humans tend to perceive as beautiful are indicators of good health and high likelihood of reproductive success. We enjoy looking at faces that are symmetrical,⁴ and we tend to find signs of good health attractive—such as even-colored skin.⁴ Humans also enjoy looking at things that are familiar to them, so "average" faces—that is, faces that have features that are statistically closer to the norm, tend to be perceived as more visually pleasing.⁴ But in addition to these basic and biologically based drivers of attraction, we are also influenced by social factors. If we were not, beauty ideals would not change over time and would have been perfectly fixed since the beginning of human history, but there is no question that what is considered beautiful evolves. For example, among white people in the Victorian era in Europe and the United States, being pale and plump was considered beautiful—reportedly, in part, because it was difficult for the average person to afford the luxury of staying out of the sun and getting enough to eat to attain these ideals. Other beauty ideals for women throughout history and across cultures have included the unibrow (in Ancient Greece), reshaped eyebrows (ancient India), blackened teeth (7th century Japan), a large lower lip or elongated neck (Africa), a high forehead (Renaissance Italy), and a small, pointed chin (18th-century France).

EXHIBIT 18

Child Pornography Offenses Are a Valid Diagnostic Indicator of Pedophilia

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This study investigated whether being charged with a child pornography offense is a valid diagnostic indicator of pedophilia, as represented by an index of phallometrically assessed sexual arousal to children. The sample of 685 male patients was referred between 1995 and 2004 for a sexological assessment of their sexual interests and behavior. As a group, child pornography offenders showed greater sexual arousal to children than to adults and differed from groups of sex offenders against children, sex offenders against adults, and general sexology patients. The results suggest child pornography offending is a stronger diagnostic indicator of pedophilia than is sexually offending against child victims. Theoretical and clinical implications are discussed.

Keywords: pedophilia, child pornography, sexual arousal, phallometry, diagnosis

Justice statistics suggest that the number of child pornography¹ investigations is increasing (Finkelhor & Ormrod, 2004). Clinicians may, therefore, be increasingly asked to assess child pornography offenders with regard to decisions about risk, treatment, and supervision. A particularly germane question in these clinical assessments is whether the child pornography offender is a pedophile, given the intuitive link between possession of child pornography and pedophilia, defined as a persistent sexual interest in prepubescent children (American Psychiatric Association, 2000).

The present study was conducted to determine whether child pornography offenses are a valid diagnostic indicator of pedophilia. Clinicians currently rely on three potential sources of information when considering the diagnosis of pedophilia: self-report, a history of sexual behavior involving children, and psychophysiological assessment. All of these sources have their limitations. Self-report regarding an individual's sexual interests is the simplest to obtain, but some individuals will deny having pedophilic interests, given the potential social consequences of such a disclosure (see Jenkins, 1998). An individual's history of

sexual offenses, in terms of the number, gender, age, and relatedness of child victims, is informative (Seto & Lalumière, 2001), but it only approximates the offender's interests because it is limited to known victims. The number of documented child victims of sexual offenses may underestimate the actual number of children with whom the individual has had sexual involvement, and in some cases, it is limited to the children who were accessible to the offender, irrespective of his interests. Psychophysiological assessment methods such as viewing time (e.g., Abel, Huffman, Warberg, & Holland, 1998; Harris, Rice, Quinsey, & Chaplin, 1996) and phallometry (Blanchard, Klassen, Dickey, Kuban, & Blak, 2001; Freund & Blanchard, 1989; Freund & Watson, 1991; Seto, Lalumière, & Blanchard, 2000; Seto, Lalumière, & Kuban, 1999) provide an objective method of assessing sexual interests, but they also can be vulnerable to response suppression.

Thus, identifying new sources of information about pedophilia would have both clinical and theoretical applications. Child pornography offending is a promising candidate indicator, given the experimentally demonstrated effects of mainstream adult pornography exposure on attitudes about women, sexual perceptions, and aggressive behavior (for a recent review, see Seto, Maric, & Barbaree, 2001). However, relatively little is known about child

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¹ We define child pornography as visual depiction of children with their genital or anal areas uncovered or of children in sexual situations, consistent with the statutory definitions of Canadian and American legislation (Sec 163.1 of the Criminal Code of Canada and the American Child Pornography Prevention Act of 1996). For example, the Canadian Criminal Code defines child pornography as a visual representation that shows a "person who is or is depicted as being under the age of eighteen years and is engaged in or is depicted as engaged in explicit sexual activity" or displays, "for a sexual purpose, a sexual organ or the anal region of a person under the age of eighteen years" (Sec 163.1, R.S. 1985, c. C-46).

pornography offenders (see Jenkins, 2001). Howitt (1995) interviewed 11 adult male pedophiles who reported occasional use of child pornography. These men said they created their own sexually arousing materials from images in catalogues, magazines, and other freely and legally available sources. Quayle and Taylor (2002) interviewed 13 men convicted of downloading child pornography from the Internet. Many of these men acknowledged that the material they downloaded was sexually arousing to them and corresponded in content to their sexual fantasies. Galbreath, Berlin, and Sawyer (2002) reported data from 39 individuals who were assessed at an outpatient clinic because of concerns about their use of the Internet for sexual purposes. All had used sexually explicit Web sites, and the majority (64%) had participated in sexually explicit chat rooms. Fifty-five percent of the outpatients had downloaded child pornography, and 34% had attempted to meet a minor for sex. Seto and Eke (2005) followed a sample of men charged with child pornography offenses and found that those who also had a history of other criminal involvement were more likely to reoffend during the follow-up period (average 2.5 years) than were those with only child pornography offenses in their history. Not surprisingly, those with a prior history of sexual offenses involving contact with a victim were the most likely to sexually reoffend.

The present study was conducted to determine whether being charged with a child pornography offense is a valid indicator of pedophilia. We predicted that men charged with a child pornography offense (*child pornography offenders*) would show greater sexual arousal to children during phallometric testing than would men with no history to suggest pedophilia (i.e., men who had committed sexual offenses against victims aged 17 or older only; *offenders against adults*) and men who had been referred for sexological evaluations because of concerns about their sexual interests or behaviors (e.g., compulsive use of prostitutes or commercially available pornography; *general sexology patients*). In contrast, we expected child pornography offenders to be similar in their patterns of sexual arousal to men who had committed sexual offenses against child victims aged 14 or younger (*offenders against children*).

Method

Subjects

We obtained data for 685 patients assessed at the Kurt Freund Laboratory of the Centre for Addiction and Mental Health (Toronto, Ontario, Canada). This laboratory provides comprehensive evaluations to males referred as a result of illegal or clinically significant sexual behaviors. The primary source of referrals to this facility was parole and probation officers (36%), followed by lawyers (24%), self-referral through a physician (21%), and correctional institutions (18%).

The initial sample consisted of 887 men; 202 did not produce a valid result on the phallometric test used in this study (e.g., refused to participate in the assessment, equipment malfunction, lack of any response to any sexual category) and were dropped from the analysis. Sex offenders with victims who were 15 or 16 years old were not included in the initial search of the database. The study sample of 685 men had mean and median ages of 36.8 years ($SD = 12.0$) and 36.0 years, respectively. The median educational level was high school graduation; a third had not graduated high school, and a third had completed some college or university schooling. The patients were predominantly of European descent, with 79.1% describing themselves as White, 6.1% as Black, 4.7% as Indian or Pakistani, 2.2% as Southeast Asian, 1.5% as Aboriginal Canadian, 1.3% as Filipino or Pacific Islander, and 5.1% as "other," which included mixed ancestry.

Of the 685 patients in the study sample, 100 had charges for child pornography offenses (child pornography offenders); of these men, 57 had no known sexual offenses against children, whereas 43 had sexual offenses against one or more children. Another 178 men had no history of charges for child pornography but did have a history of one or more sexual offenses against victims who were aged 14 or younger (offenders against children), 216 men had no history of charges for child pornography or sexual offenses against child victims but did have a history of sexual offenses against victims who were aged 17 or older (offenders against adults), and 191 men had no history of charges for child pornography or sexual offenses (general sexology patients).

Procedure

The standard evaluation at the laboratory consists of a phallometric assessment of the patient's sexual interests, a semistructured clinical interview, and a review of mental health and legal documents supplied by the referral source. The evaluation also includes a brief neuropsychological battery that is unrelated to the present investigation (see Cantor et al., 2004). On completion of his evaluation, each patient was invited to permit his clinical data to be used for research purposes.

Sexual offense history. File information was reviewed to identify patients who had been charged for child pornography offenses. In addition, phallometric laboratory staff used a standardized form to record each patient's history of sexual offenses against child or adult victims. The sexual offense information came primarily from collateral documents such as reports from the police, probation, or parole officers. Some patients admitted having additional victims who were not recorded in their files and for whom they had not been charged; these additional victims were added to the victims known through file information.

Phallometric testing. Clinicians and researchers use phallometry to quantify the sexual interests of sexual offenders against children (e.g., Howes, 1995). A meta-analytic review of 61 sex offender follow-up studies found that phallometrically assessed sexual arousal to children was the strongest predictor of subsequent sexual offenses among all the variables that were examined (Hanson & Bussière, 1998).

The specific protocol in use at the Kurt Freund Laboratory over the course of the present investigation reliably distinguishes pedophilic from *teleiophilic* men (i.e., men who prefer sexually mature persons). Blanchard et al. (2001) have described the phallometric testing procedure and data preparation in detail. Briefly, a computer records penile blood volume while the patient observes a standardized set of stimuli that depict persons of potential sexual interest. Changes in penile blood volume (i.e., his degree of penile erection) indicate his relative sexual interest in each stimulus category.

The stimuli used in the phallometric test were slides accompanied by audiotaped narratives presented through headphones. There were seven categories of slides, six of which depicted nude models representing the following combinations of sex and age: female adults, female pubescent children, female prepubescent children, male prepubescent children, male pubescent children, or male adults. The seventh stimulus category was neutral slides depicting landscapes. Each slide was accompanied by a narrative describing sexual interactions with the depicted person, except for the neutral slides, which were accompanied by a narrative describing solitary, nonsexual activities.

The data reduction process yields seven phallometric test scores, one for each of the seven stimulus categories. These phallometric test scores are ipsatively standardized; that is, each patient's phallometric test scores are transformed to have a mean value of zero and a standard deviation of one, consistent with the recommendation of Harris, Rice, Quinsey, Chaplin, and Earls (1992) regarding the optimal treatment of phallometric data. Phallometric test scores greater than zero indicate that the participant responded to the category above his own average response, and scores below zero indicate the participant responded to the category less than his own average

response. Finally, a *pedophilic index* was calculated for each patient: The pedophilic index was the difference between his greatest response to any of the four child categories and his greatest response to either of the two adult categories.

Results

We first assigned participants to nine groups on the basis of their sexual offense histories. There were 57 child pornography offenders without a history of sexual offenses against children; 43 child pornography offenders with a history of sexual offenses against one or more victims aged 14 or younger; 131, 36, and 11 offenders against children with one, two, or three or more victims aged 14 or younger, respectively; 101, 35, and 80 offenders against adults with one, two, or three or more victims aged 17 or older, respectively; and 191 general sexology patients. The last comparison group was included because we have found in previous research that, as a group, general sexology patients show a teleiophilic sexual preference for adult women (Blanchard et al., 2001; Seto et al., 1999).

There was a difference between groups in their referral source: The majority of child pornography offenders without a history of sexual offenses against children were referred by their lawyers (70%), whereas the majority of child pornography offenders with a history of sexual offenses against children were referred by probation or parole officers or correctional institutions (82%). In comparison, a slight majority of offenders with child or adult

victims were referred by probation or parole officers (52%), and a majority of general sexology patients were self-referred (67%).

The proportions of men in each of the nine study groups—two groups of child pornography offenders, three groups of offenders against children, three groups of offenders against adults, and one group of general sexology patients—who met a diagnostic criterion for pedophilia used at the Kurt Freund Laboratory (pedophilic index greater than .25; Blanchard et al., 2001) are shown in Figure 1. There was a significant difference between groups in the proportions who met this diagnostic criterion: 61% of child pornography offenders, 35% of offenders with child victims, 13% of offenders with adult victims, and 22% of general sexology patients, $\chi^2(3, N = 685) = 86.77, p < .001$. In other words, child pornography offenders had almost three times the odds (odds ratio = 2.8) of being identified as a pedophile phallometrically than did offenders against children. The corresponding odds ratios were 10.5 when comparing child pornography offenders with offenders against adults and 5.7 when comparing child pornography offenders with general sexology patients.

We also compared the same nine groups in their absolute phallometric responses (penile volume change; in cc) to any stimuli depicting children and to any stimuli depicting adults (see Figure 2). Consistent with the results from the analysis of pedophilic indices, child pornography offenders responded substantially more to stimuli from categories depicting children than to stimuli from categories depicting adults. In contrast,

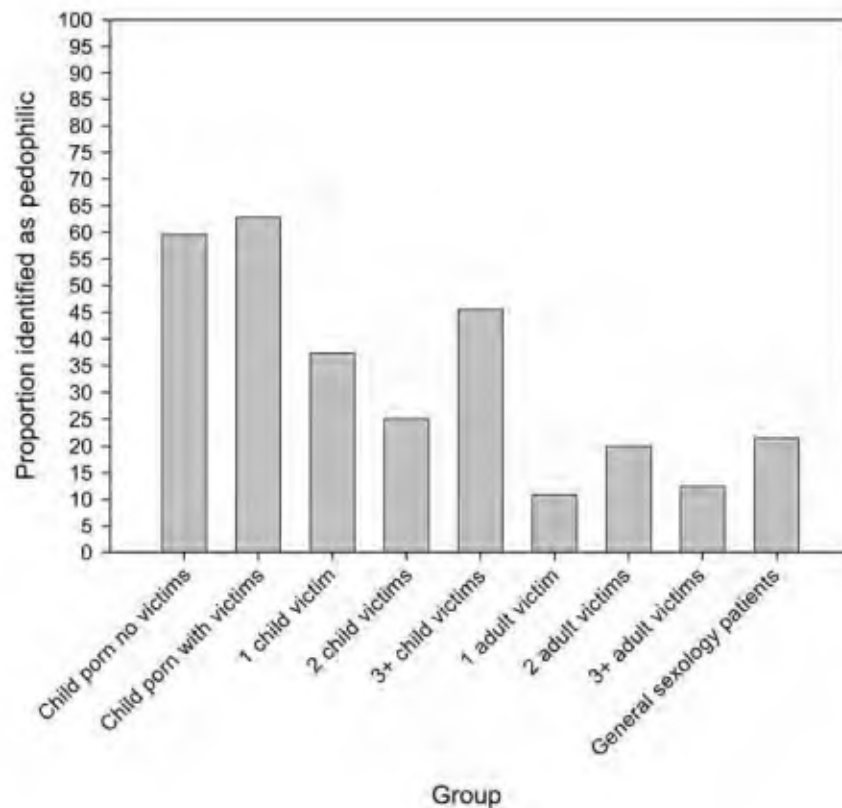


Figure 1. Proportion of child pornography offenders, offenders against children, offenders against adults, and general sexology patients identified as pedophilic according to the phallometric test.

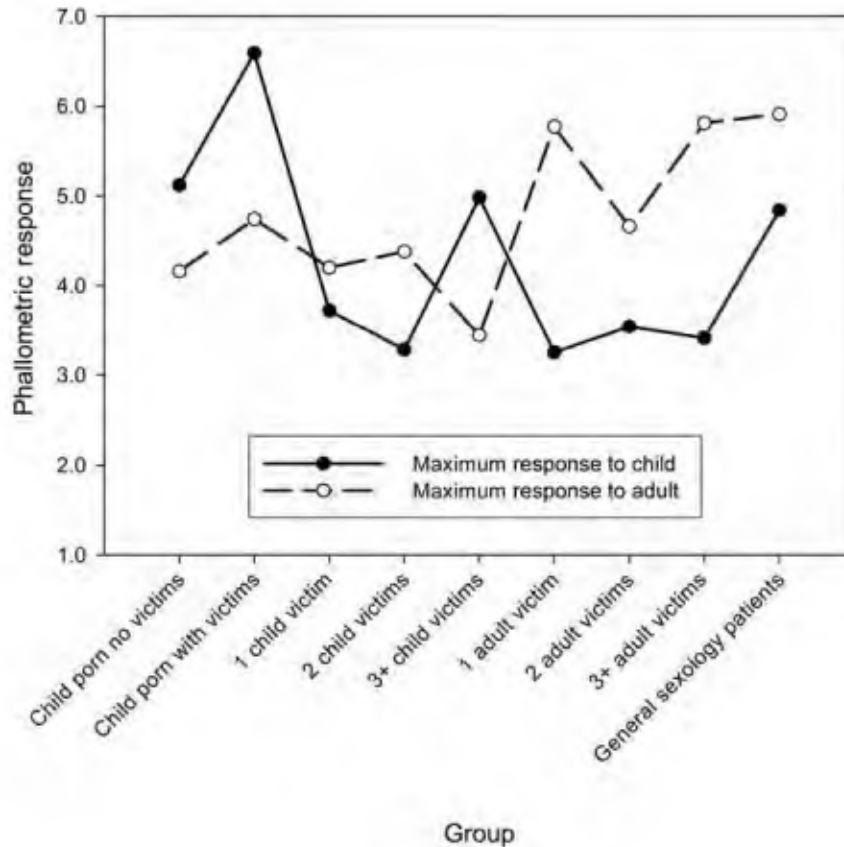


Figure 2. Maximum phallometric responses to child stimuli and to adult stimuli by child pornography offenders, offenders against children, offenders against adults, and general sexology patients.

offenders against adults and general sexology patients responded more to stimuli depicting adults than to stimuli depicting children. Offenders against children with three or more victims also showed a greater absolute phallometric response to children than to adults.

We then combined the three groups of offenders against children and the three groups of offenders against adults and compared the resulting five groups—two groups of child pornography offenders, a combined group of offenders against children, a combined group of offenders against adults, and one group of general sexology patients—on their average pedophilic indices. Consistent with the results depicted in Figure 1, there was a significant difference between groups in their average pedophilic index, $F(4, 680) = 24.21, p < .001$ (see Figure 3). Examining the 95% confidence intervals, both child pornography offender groups had average pedophilic indices indicating significantly greater sexual arousal to a category depicting children than to a category depicting adults (i.e., the two child pornography offender group means did not overlap with zero). The two child pornography offender groups did not significantly differ from each other, but they had significantly higher average pedophilic indices than did the other three groups. As found in many previous studies, offenders against children had significantly higher average pedophilic indices than did offenders against adults or general sexology patients.

Discussion

Our results indicate that child pornography offending is a valid diagnostic indicator of pedophilia. Child pornography offenders were significantly more likely to show a pedophilic pattern of sexual arousal during phallometric testing than were comparison groups of offenders against adults or general sexology patients. In fact, child pornography offenders, regardless of whether they had a history of sexual offenses against child victims, were more likely to show a pedophilic pattern of sexual arousal than were a combined group of offenders against children.

Our results suggest that child pornography offending might be a stronger indicator of pedophilia than is sexually offending against a child. A possible explanation for this finding is that some nonpedophilic men victimize children sexually, such as antisocial men who are willing to pursue sexual gratification with girls who show some signs of sexual development but are below the legal age of consent. In contrast, people are likely to choose the kind of pornography that corresponds to their sexual interests, so relatively few nonpedophilic men would choose illegal child pornography given the abundance of legal pornography that depicts adults. Thus, an undifferentiated group of offenders against children would have a lower average pedophilic index than would a group of child pornography offenders. Another possible explanation for the difference between child pornography offenders and offenders

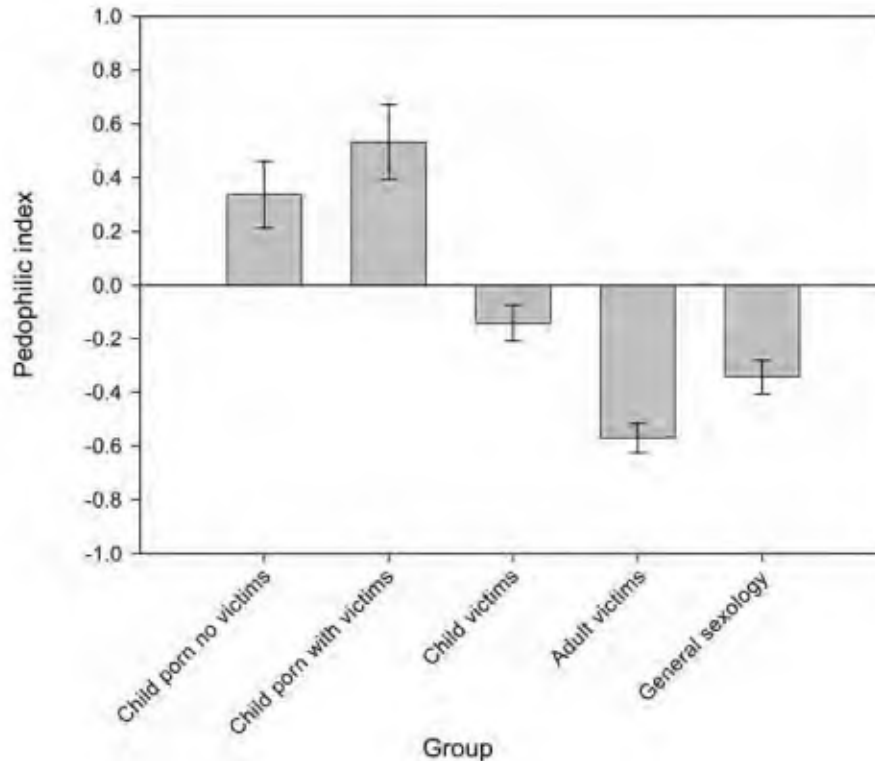


Figure 3. Average pedophilic indices for child pornography offenders without a history of sexual offenses against child victims, child pornography offenders with a history of offenses against child victims, offenders against children, offenders against adults, and general sexology patients.

against children is that the child pornography offenders were less likely to attempt to suppress their responses to stimuli depicting children (or were less successful in suppressing such responses). However, there is no a priori reason that the two groups of men would differ in motivation or ability to suppress sexual arousal to children.

Our results have implications for both clinical and theoretical work on pedophilia because they suggest that child pornography offending has diagnostic significance and may be particularly helpful in circumstances in which the person denies a sexual interest in prepubescent children, or has no documented history of sexual behavior involving children, or in which phallometric test results are unavailable. Whether child pornography offending is associated with a different prognosis than are other indicators of pedophilic interests, such as its relative ability to predict sexual recidivism, remains to be determined.

This study had several limitations. First, the study participants were referred to the Kurt Freund Laboratory for a sexological assessment because of clinical or legal concerns about their sexual interests or behavior, so there may have been an ascertainment bias that makes our sample less representative of child pornography users in general. Second, there was a significant difference in referral source across the groups examined in this study. Perhaps reflecting this difference in referral source, 43% of the 100 child pornography offenders included in this study had been charged with a sexual offense involving a child victim, compared with unpublished data that suggest that approximately a third of child

pornography offenders have a criminal record of sexual offenses involving children (Federal Bureau of Investigation, 2002; Perrien, Hernandez, Gallop, & Steinour, 2000; R. Smith, personal communication, July 20, 2000, as cited in Klain, Davies, & Hicks, 2001). In contrast, Seto and Eke (2005) found that 24% of their sample of 201 child pornography offenders had a prior contact sexual offense history. It would be very interesting to determine whether child pornography possession is still a valid indicator of pedophilia in a nonclinical and nonforensic sample. Although such research would be more difficult to conduct, studies that could assure participants of their confidentiality (e.g., using a Certificate of Confidentiality provided by the National Institutes of Health in the United States or using anonymous responses to Internet surveys globally) would help elucidate the relationships between child pornography possession, sexual interests, and sexual behavior.

Finally, although we were able to identify participants who were charged for child pornography offenses, we did not have sufficient information in the clinical file about the nature and extent of their child pornography to examine whether specific types of content were related to sexual history or phallometric test results. For example, individuals who collect pornography depicting only girls might be less likely to commit sexual offenses against boys or to show sexual arousal to boys in the laboratory. Given the positive relationships between sexual arousal to children and having multiple child victims, boy victims, and younger child victims (Seto & Lalumière, 2001; Seto, Murphy, Page, & Ennis, 2003), and other research demonstrating that these same victim characteristics pre-

dict subsequent offending (Seto, Harris, Rice, & Barbaree, 2004), one could predict greater pedophilic arousal—and a greater likelihood of subsequent sexual offenses against children—among individuals who possess more child pornography content, pornography depicting boys, and pornography depicting very young children. We are now beginning a research project designed to test this question.

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“Harder and Harder”? Is Mainstream Pornography Becoming Increasingly Violent and Do Viewers Prefer Violent Content?

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“Harder and Harder”? Is Mainstream Pornography Becoming Increasingly Violent and Do Viewers Prefer Violent Content?

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It is a common notion among many scholars and pundits that the pornography industry becomes “harder and harder” with every passing year. Some have suggested that porn viewers, who are mostly men, become desensitized to “soft” pornography, and producers are happy to generate videos that are more hard core, resulting in a growing demand for and supply of violent and degrading acts against women in mainstream pornographic videos. We examined this accepted wisdom by utilizing a sample of 269 popular videos uploaded to PornHub over the past decade. More specifically, we tested two related claims: (1) aggressive content in videos is on the rise and (2) viewers prefer such content, reflected in both the number of views and the rankings for videos containing aggression. Our results offer no support for these contentions. First, we did not find any consistent uptick in aggressive content over the past decade; in fact, the average video today contains shorter segments showing aggression. Second, videos containing aggressive acts are both less likely to receive views and less likely to be ranked favorably by viewers, who prefer videos where women clearly perform pleasure.

The pornography industry remains a sizable business, despite considerable changes to its business model and media over the past decade. The size of the industry in the United States alone was estimated in 2010 at around \$13 billion, and the global porn market was nearly \$100 billion (Rosen, 2013). In particular, Internet pornography, which allows easy access, affordability, and anonymity (Cooper, 1998), has flourished over the past decade and has become the main source of pornography consumption (Hald, Malamuth, & Lange, 2013). According to some estimates, it now accounts for about 30% of all Web traffic (Anthony, 2012).

Previous estimates of the prevalence of aggression in rental and Internet pornographic videos have varied greatly, ranging from about 2% (McKee, 2005) to almost 90% (Bridges, Wosnitzer, Scharrer, Sun, & Liberman, 2010) of all videos. This wide range partly reflects different definitions of aggression, but it is also the result of examining different forms of media and of varying methodological and sampling choices. Regardless of how one measures aggression, multiple studies have reported a relationship between consuming violent pornography and acceptance of violence against women, as well as real-life coercion, aggression, and proclivity to commit sexual assault (Boeringer, 1994, Hald, Malamuth, & Yuen, 2010, Malamuth, Hald, & Koss, 2012, McKenzie-Mohr

& Zanna, 1990, Milburn, Mather, & Conrad, 2000, Weisz & Earls, 1995), although the causal direction in this relation remains contested (Ferguson & Hartley, 2009, Lim, Carrotte, & Hellard, 2016).

One of the major contentions against the adult film industry is that it continuously pushes the boundaries of sexual conventions, becoming “harder and harder” (Fradd, 2017; Sun & Picker, 2008, Sun, Wosnitzer, Bridges, Scharrer, & Liberman, 2010) with every passing year. Contents that were previously considered marginal and esoteric, such as rough, aggressive, and demeaning acts, gradually make their way into mainstream videos and eventually become the new norm. Some pornography scholars and pundits have suggested that, over time, viewers, the majority of whom are men, gradually become desensitized to such materials. In fact, they often actively seek aggressive and demeaning contents once the thrill and excitement previously achieved by traditional videos diminishes, similar to drug addicts who consume higher doses once they are unable to reach the same high as with the previous dose (Dodge, 2007, Hilton & Clark, 2011, Paul, 2010). Some have even suggested that aggression and humiliation of women are preferred not merely because they present a novelty but rather because they celebrate the tension and thrill derived from sexualizing gender inequalities (Dines, 2006, 2010, Dines, Jensen, & Russo, 1998).

Anti-porn critics have further charged that the producers, creators, and distributors of pornographic materials are more

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than happy to comply with the growing demand for materials that depict aggression against women and/or acts that demean and humiliate women (Sun & Picker, 2008). These key industry figures, who are almost all men, remain oblivious to or outright deny the possible harms of such materials, catering to or even helping create public demand, all in a cynical pursuit of greater profits (Dines, 2010, Jensen, 2007, Paul, 2005, Sun & Picker, 2008). Consequently, and in the absence of any effective regulation, mainstream pornography unabatedly adopts harder content, with scenes depicting aggression and humiliation of female performers increasingly becoming the norm (Bridges et al., 2010).

In the present article, we sought to assess these claims. To our knowledge, no previous study has systematically examined the temporal tendencies in depictions of aggression. We are also not aware of any extant studies examining the relationship between aggressive contents and the popularity of videos (in terms of both number of views and viewers' ratings). We therefore analyzed data from a sample of 269 videos. The majority of these were very frequently watched videos, but we also analyzed a smaller random sample of less frequently watched videos for comparative purposes. Using varying definitions of aggression against women (importantly, we differentiated between all visible aggression and clearly nonconsensual aggression), we examined the content of popular videos over the past decade and whether videos that include aggression are indeed more popular among viewers. Our study follows recent calls among sociologists of sexuality and sex work to adopt a careful, evidence-based approach to the study of pornography, its contents, and its effects (McKee, 2015, Weitzer, 2011).

Does Aggression In Porn Matter And How?

Over the past few decades, multiple studies have examined the possible effects of pornography on gender inequality and sexual violence. The debate regarding the potential harmful effects of pornography is rooted in the writings of prominent feminist theorists and activists beginning in the early 1970s. These writers connected pornography to sexual violence, arguing that pornography almost invariably leads to sexual aggression and misogyny (Dines et al., 1998, Dworkin, 1994, Jensen, 2007, Paul, 2005). Some have even argued that pornography *is* violence against women. It portrays women as sexual objects who enjoy being humiliated, degraded, and treated aggressively, and fosters myths about female rape desires (Brownmiller, 1975, Dines, 2010, Dworkin, 1989, Dworkin & MacKinnon, 1988, Russell, 2000). Other scholars, however, have been more skeptical about the relationship between pornography and violence against women. They argue that pornography offers a field full of contradictory and multilayered contents that can offer significant benefits for both men and women and can be enjoyed without necessarily causing harm (Chapkis, 1996,

Duggan, Hunter, & Vance, 1994, McKee, 2014, Strossen, 1995, Watson & Smith, 2012; Weitzer, 2011, Willis, 1994).

Empirical research on the relationship of pornography use to gender inequality and sexual violence also remains inconclusive. Some studies have suggested that pornography use is associated with the endorsement of rigid gender stereotypes among young female users (Brown & L'Engle, 2009) and with nonegalitarian attitudes and sexism among male users (Hald et al., 2013, Peter & Valkenburg, 2009). A recent review of research on adolescent porn use further suggests a relationship between pornography consumption and aggressive behaviors, including sexual aggression (Peter & Valkenburg, 2016). Others have shown that exposure to pornographic materials, especially violent pornography, is associated with higher acceptance of violence against women (Hald et al., 2010, Malamuth et al., 2012, McKenzie-Mohr & Zanna, 1990). In contrast, some recent research efforts have reported that porn use is not associated with negative attitudes toward women (McKee, 2014), and that porn users hold attitudes that are actually more egalitarian toward women in positions of power, women working outside the home, and abortion compared with nonusers of porn (Kohut, Baer, & Watts, 2016). Some recent reviews of the literature concluded that the current state of evidence is limited to correlation and does not demonstrate a causal relationship between porn viewing and either acceptance of or actual violence against women (Ferguson & Hartley, 2009, Lim et al., 2016).

Still, social psychologists and communication scholars continue to argue that mass media influence viewers by providing them with cognitive scripts, including ones related to aggressive and violent behaviors (Huesmann, 1986, Wright, Tokunaga, Kraus, & Klann, 2017). These cognitive scripts provide expectations about both normative and appropriate behaviors and present behavioral guidelines (Wright, 2013). In the context of sexuality, they determine what is considered a sexual situation, who should participate in it, what events should be part of it, and how people should respond to these events (Zhou & Paul, 2016). These arguments are largely rooted in sexual scripting theory, which sees sexual scripts as specific cognitive schemata or personalized systems for defining sexual reality and preferences (Simon & Gagnon, 1986, Štulhofer, Buško, & Landripet, 2010). Mosher's (1988) sexual involvement theory further suggests that involvement in and subjective response to explicit materials is facilitated when contents match viewers' sexual scripts. "Deep involvement" and higher levels of arousal require goodness of fit between the contents and the user's preferred images and scripts (Pearson & Pollack, 1997).

Script theories suggest that pornography creates stereotypical expectations regarding the sexual behaviors and preferences of various social groups (Brown & L'Engle, 2009). As such, it is a potent teacher of both beliefs and behaviors, teaching general attitudes toward women and sexuality and shaping sexual scripts and practices (Layden, 2010, Paul, 2005). Furthermore, even if the causal relationship between general pornography consumption and actual violence

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remains disputed, the consumption of pornography that includes aggression is reportedly associated with the disruption of intimate relationships (Wright, Tokunaga, & Kraus, 2016), as well as with higher degrees of real-life sexual coercion, aggression, and rape fantasies and proclivity (Boeringer, 1994, Malamuth, 1981, Milburn et al., 2000, Ohbuchi, Ikeda, & Takeuchi, 1994, Weisz & Earls, 1995)

“Harder And Harder”: Is Violence Against Women In Porn Growing In Volume And Popularity?

The final segment of the influential 2008 documentary *The Price of Pleasure* (Sun & Picker, 2008), was titled “Harder and Harder.” It projected a grim future for the porn industry, one in which the boundaries are constantly being pushed and aggression and violence become a continuously growing part of mainstream porn videos. These predictions rely in part on the views of renowned feminist anti-pornography scholars and journalists, such as Gail Dines (2010), Karen Boyle (2010), Robert Jensen (2007), and Pamela Paul (2005), but they also seem to be supported by a prominent 2010 study on the content of mainstream pornography (Bridges et al., 2010, Sun et al., 2010) In this study, the researchers examined scenes from the 50 most popular rental pornographic videos. They reported that 88.2% of these scenes contained physical aggression, almost exclusively against women. These figures led the authors and other scholars and public intellectuals to conclude that aggression is no longer reserved to niche genres but has in fact become a pervasive and normative part of mainstream pornography. They argue that this normalization, in turn, brings with it a constant expansion and escalating depictions of aggression, as producers continue to push the envelope, seeking to maximize profits.

Subsequent content analyses of pornographic videos, which focused on the Internet (Gorman, Monk-Turner, & Fish, 2010, Klaassen & Peter, 2015, Shor & Golriz, *in press*), suggested a lower prevalence of aggression and degradation than that proposed by Bridges et al. (2010) Still, these later analyses did not challenge the contention about the gradual escalation of aggression in mainstream pornography. How can one evaluate such claims? We argue that the “harder and harder” premise actually enfolds two related yet separate assertions, each of which can be tested empirically. The first of these assertions is a temporal one, regarding the content of popular pornography on the Internet, which presumably contains higher levels of aggression with each passing year. The second assertion is a more subtle one, related to the reason for this assumed escalation in content, namely that Internet porn viewers have come to prefer videos containing aggressive acts to those that do not contain such acts. In this section, we expand on each of these assertions.

The view that pornographic video content is becoming increasingly aggressive appears to be almost axiomatic in

much of the current popular writings on pornography; it has also been expressed in some current scholarly works on pornography (e.g., Boyle, 2010, DeKeseredy, 2015, DeKeseredy & Hall-Sanchez, 2017; Dines, 2010, Foubert, 2016, Fradd, 2017, Jensen, 2010, Tyler, 2010, Whisnant, 2010) Recent articles in leading media outlets such as the BBC (Brown, 2017), *The Daily Telegraph* (Tuohy, 2015), *The Independent* (Smith, 2013), *The Washington Post* (Halverson, 2016), *The Guardian* (Bindel, 2010), and *The Sydney Morning Herald* (McKenzie, 2011) talk about how pornography has been changing for the worse. These articles have argued that pornography has become, and continues to move in the direction of, rougher, harder, and more violent materials, with producers and audiences alike always looking for something more extreme and more shocking.

New York Times writer Judith Shulevitz (2016) argued that the Internet has made porn weirder and weirder because the flooding of the market by amateur sex tapes has cut into producers’ profits. The only way left for these producers to compete is by coming up with more extreme scenarios that satisfy the most *outré* desires. Shulevitz spoke with communication experts who maintained that, in recent years, fetishes that one could only find on the “dark net” have become easily accessible through popular porn tube sites such as PornHub. They argue that degrading and aggressive videos have moved into more prominent locations within these sites, making them more likely to be viewed by wider audiences.

Psychiatrist Norman Dodge (2007) suggested that even the very meaning of hard-core porn has changed over the years. Soft-core contents today are what hard-core used to be in the past, while hard-core videos are increasingly dominated by themes that infuse sex with hatred and humiliation. Dodge argued that the more our society becomes sexually saturated, the more porn makers pump out harder and harder materials to try to remain on the cutting edge. Other, more recent, scholarly works (Boyle, 2010, DeKeseredy & Corsianos, 2015, DeKeseredy & Hall-Sanchez, 2017; Dines, 2010, Fradd, 2017, Jensen, 2007, Paul, 2010) have also contended that the content of pornography continues to become increasingly violent, although none of these studies has provided systematic empirical support for this contention. Indeed, to the best of our knowledge, such claims have never been supported by empirical evidence from large-scale systematic analyses of pornographic content.

H1: The number of mainstream pornographic videos that contain aggressive acts has been steadily increasing over the past decade, and the average video today is likely to contain longer segments of aggression than a decade ago.

The second assumption in many recent writings on Internet pornography is that the greater supply of videos containing aggression is fueled by ever-increasing consumer demand. That is, viewers are not only exposed to greater

degrees of aggression but also actively seek these contents and prefer them to nonaggressive ones. This claim is also quite prevalent in the anti-porn literature, despite some contrary evidence, such as those from an interviews-based study by Loftus (2002), which reported that most male pornography viewers did not prefer aggressive materials. The assumption that men prefer aggressive and demeaning content largely relies on the increasingly popular, although highly contested, premise that pornography viewing often becomes an addiction, as it affects the brain in a way that is similar to that of most drugs (Dodge, 2007, Foubert, 2016, 2017, Hilton & Clark, 2011). According to this view, much like any other addiction, frequent pornography use is characterized by habituation and a growing demand for more extreme substances to achieve the same rewards. Although this addiction model has been overtly rejected by most scientists, it remains common in both media and clinical practice (Ley, Prause, & Finn, 2014, Van Rooij & Prause, 2014).

Paul (2005, 2010), for example, interviewed male pornography consumers and concluded that once viewers increase the quantity of porn consumption, they then want more quality, meaning more action, more intensity, and more extreme situations. Viewers learn to ignore or navigate around unwanted imagery, and they gradually find previously arousing materials to be less interesting, leading them to seek more extreme and shocking materials, which often include degradation and aggression. Whisnant (2010) reviewed online postings by individuals who discussed porn and concluded that the “contemporary pornography industry is a wasteland of lost and damaged humanity” (p. 117). She argued that hostile and humiliating acts against women are gradually becoming the rule rather than the exception, perhaps because many men actually prefer and enjoy such contents, as reflected in their online comments.

Dines (2006, 2010) took another step in this direction, invoking claims by other radical feminists that pornography is pleasurable to men because it sexualizes inequality between women and men (Brownmiller, 1975, Dworkin, 1989, Dworkin & MacKinnon, 1988). Dines argued that because this is the case, pornography viewers—who are largely men—do not learn to ignore aggressive materials but rather actively seek out and prefer these materials; the more degraded and abused the woman is, the greater the sexual tension, thrill, and pleasure derived by male viewers. Following this logic, one may expect videos that include scenes of aggression and humiliation to be even more popular than those that do not include such scenes. This may be particularly true for videos where women are forced into submission and clearly perform acts against their will, as this submission reinforces gender inequalities and power relations.

It should be stressed that such contentions mostly rely on a relatively small number of interviews and anecdotal evidence. To the best of our knowledge, no previous study has systematically assessed viewers’ preferences as reflected by

their response to specific aggressive and nonaggressive videos.

H2: Videos that include aggression will be more likely to receive a higher number of views and be ranked more favorably by viewers.

Method

Sample and Data

We describe our sampling strategy in detail in another article, one which focuses on racial and ethnic differences in porn aggression (Shor & Golriz, in press). We coded mainstream videos from Pornhub, one of the world’s top adult Web sites and, according to Alexa Internet, the 36th most visited site on the Internet as of 2017, with more than 80 million daily visits (PornHub, 2018). Pornhub is a freely accessible video-sharing Web site, similar to YouTube. While some previous studies of Internet pornography examined multiple Web sites (e.g., Klaassen & Peter, 2015, Vannier, Currie, & O’Sullivan, 2014), many of the most popular Web sites have overlapping ownerships (Van Der Linde, 2016). Therefore, the list of most watched videos on these Web sites includes multiple overlapping and consequently comparable videos (Klaassen & Peter, 2015).

Similar to other recent analyses (Bridges et al., 2010, Klaassen & Peter, 2015, McKee, 2005), we analyzed the most highly watched videos from each of our predefined categories, seeking to increase generalizability and explore the porn content that is most likely to be watched by wide audiences (and therefore have a wider cultural impact). In our initial sampling strategy, we sought to increase representation for both women and men from multiple ethnic and racial groups. Accordingly, we employed a purposive sampling technique, including in the initial sample the most watched videos from the following Pornhub categories: “All” (70 videos), “Interracial” (25 videos), “Ebony” (52 videos), “Asian/Japanese” (35 videos), “Latina” (19 videos), and “Gay” (25 videos).

Because one of the major goals of the current analysis was to compare the degree of aggression in videos that are more popular (as measured by number of views) with the degree of aggression in videos that are less popular, we complemented this initial sample with a random sample of 80 additional videos. This additional sample was retrieved using Pornhub’s “Random” function, which randomly samples a video from the Web site’s archives.¹ In total, this sampling effort resulted in a pool of 307 coded videos. We then excluded six videos that had more than two participants, 26 videos that did not include women, and six videos that did not include men, as we chose to focus here on the

¹ Using this sampling strategy allowed us to reach a sample of videos that are less popular but still represent a wider range of production years, which is important for both comparability purposes and to try to assess change over time.

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violence of men against women. This process resulted in a final sample of 269 videos, 262 of which were uploaded to Pornhub between 2008 and 2016, with 25 to 36 videos uploaded each year within this nine-year range. (See Figure 1 for full details on the number of videos per year.)

Measurements

Table 1 presents descriptive statistics of our measurements, divided into three categories: dependent variables, focal independent variables, and covariates. For each of these measurements, we present data on its frequency in each of our sampling categories.

Dependent variables to assess video popularity. We sought to assess the effect of aggression on video popularity. However, there is no one agreed-upon way to measure either aggression or popularity. To assess the concept popularity, we coded two distinct measures:

Number of views. The first intuitive way to measure a video’s popularity is by counting the number of views it received. This approach assumes that Internet users “vote with their fingers” and videos that match the preferences and fantasies of wider audiences are more likely to be watched and rewatched. Our initial sample included only the most highly watched videos, leading to relatively low heterogeneity on this measure. We therefore added an additional random sample of videos that received fewer views. The final sample thus includes a substantial variety of videos, ranging from about 11,000 views to more than 116 million views.

Percent likes. One possible shortcoming of number of views as a measure of popularity is that videos may receive more views not because most viewers prefer them but rather because the viewers find the title or thumbnail leading to the video attractive, although these often do not clearly indicate aggression. Alternatively, the Web site itself may choose to

promote certain materials and make access to them easier, prompting higher viewership. Hence, the number of views does not always reflect viewers’ actual preferences or opinions about the videos or aggressive scenes. For example, if for some reason Pornhub decides to put more aggressive videos on its home page, these videos may receive more views simply because many viewers see them first and click on them rather than searching for other content.

We therefore examine an alternative and arguably more accurate measure of popularity, which relies on users’ reported preferences. Pornhub allows viewers to choose whether they “liked” (green thumb up) or “disliked” (red thumb down) each of the videos on its Web site. For every video in our sample we coded the percent of positive (“like”) votes out of the total number of votes. The range for this measure in our sample was between 45% and 89%.

Focal independent variables: Aggression and pleasure displays. Even more than popularity, aggression has been a contested concept in the study of pornographic materials. In another article, focusing on race/ethnicity and aggression (Shor & Golriz, in press), we described in detail the debate among scholars of pornography over the importance, interpretation, and coding of consent in pornography (see most notably Bridges et al., 2010, McKee, 2005, 2015). In light of this debate, we adopted two alternative operationalizations of aggression. The first focuses on the acts themselves and on the apparent intent to cause harm, pain, or discomfort in line with most previous studies of pornographic content (see Bridges et al. (2010)). Following this definition (henceforth *visible aggression*), we coded the following acts as physically aggressive: (1) biting, (2) pinching, (3) kicking, (4) pulling hair, (5) hitting of the face, (6) hitting of the body, (7) choking, (8) forced gagging, (9) spanking, (10) sadomasochism, (11) rough handling (e.g., pushing, shoving, tossing, shaking), and (12) forceful penetration (vaginal or anal) with penis, hand, or another object, with an apparent intent to cause pain/discomfort. We

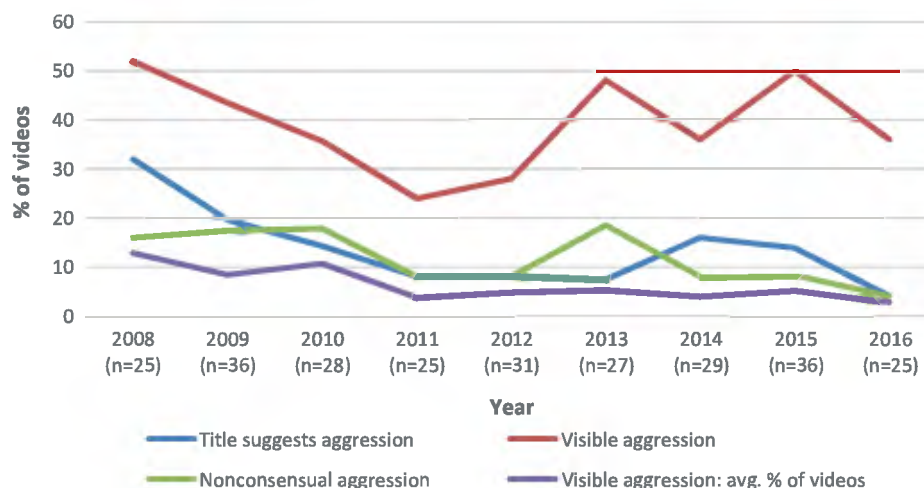


Figure 1. Temporal tendencies in aggression ($n = 269$).

Table 1. *Descriptive Statistics*

	“Asian”/ “Japanese”	“Interracial”	“Ebony”	“Latina”	“Most Viewed”	“Random”	Total
<i>N</i> videos	31	23	50	19	70	76	269
<i>Dependent variables</i>							
Mean number of views (millions)	6.6	8.4	7.3	14.0	23.5	0.06	10.0
Likes (%)	80.3	79.7	80.7	80.5	80.5	73.2	78.4
<i>Independent variables</i>							
Aggressive or “demeaning” acts							
Video title suggests aggression (%)	0.0	30.4	4.0	5.3	11.4	10.5	9.7
Physical aggression—Visible (%) ^a	74.2	65.2	36.0	73.8	12.9	36.8	39.8
Physical aggression—Nonconsensual (%) ^b	32.3	34.8	10.0	10.5	1.4	9.2	12.3
Verbal aggression (%)	3.2	4.4	12.0	10.5	28.6	50.0	25.3
Women’s pleasure expressions							
Display of pleasure (%)	71.0	65.2	84.0	100.0	68.6	68.4	73.6
Display of climax (%)	16.1	13.0	2.0	0.0	31.4	6.6	13.4
<i>Controls</i>							
Amateur video (%)	3.2	4.4	2.0	0.0	12.9	26.3	11.9
Mean video duration (minutes)	20.3	14.7	17.1	17.2	16.2	12.7	15.8
Mean number of views (millions)	6.6	8.4	7.3	14.0	23.5	0.11	10.0
Mean year uploaded to Web site	2011	2011	2010	2012	2011	2013	2012

^aDefinition not considering consent.^bDefinition considering consent.

also noted the duration of each of these acts relative to the duration of the entire video.

The second definition considers lack of consent as key for defining an act as aggressive or violent, in line with McKee’s (2005, 2015) conceptualization (henceforth *non-consensual aggression*). We watched carefully for both verbal and physical cues for lack of consent. These could be in the form of explicit verbal requests to stop or avoid a certain act, nonverbal signs of resistance (e.g., pushing away), attempts to avoid the act, and/or evident unhappiness at being in the situation or performing a certain act, which were nevertheless ignored by the sexual partner. Whenever such verbal or nonverbal cues appeared, we coded the video as containing nonconsensual aggression.

In addition to noting whether a video contained aggression or not, we also coded the total length of aggressive acts and then used this figure to calculate the percentage of the video including visible aggression. This variable is important because a video that lasts 30 minutes and includes only 2 seconds of slapping would still be considered as containing aggression, but it is clearly not the same as a video in which half of the playing time is devoted to aggressive acts. Next, for each of the videos, we also determined whether the title suggests aggression. Examples of titles suggesting aggression are “Gigantic Cock Rips Skinny Bitch” and “Teeny Booper Kidnapped by Huge Black Cock.” Examples of more neutral titles include “Stunning MILF Has the Most Spectacular Tits” and “Office Asian Fuck.” While titles may not accurately represent the actual content of videos, we believe they are often important to analyze in their own right, as even the suggestion of aggression may be an important part of the fantasy and viewing experience.

Finally, we also noted the occurrence of verbal aggression (including practices such as yelling, name-calling, threatening, and swearing at the partner) and of women’s pleasure responses and displays (e.g., moaning, screaming in pleasure, or clearly pronouncing a climax). While such pleasure responses/displays may be (and probably often are) staged, they are nevertheless important because of the message they deliver that women, and not only men, should (or are even expected to) enjoy the sexual act.

Covariates. We also coded information for four theoretically important covariates: (1) whether the video was amateur or professional, (2) the duration of the video, (3) the year in which the video was uploaded to Pornhub, and (4) the number of views the videos received. The three first variables were included in all of our multivariate regression models, while the fourth was included in all models of our ordinary least squares (OLS) regression analyses but not in our negative binomial analyses (Table 2), because in Table 2 viewership numbers are the dependent variable (refer to Table 3 for OLS analyses).

We coded videos as amateur relying primarily on the tags associated with them (i.e., labeling them as “amateur”). Theoretically, one might expect amateur videos to be viewed less frequently than professionally produced videos, as large pornographic Web sites such as Pornhub often promote the latter genre more heavily due to commercial incentives. We also control for video duration (in minutes), although we are unsure in what direction this might affect popularity. We expected the number of views (in millions) to be positively associated with percent likes. Finally, we controlled for the year in which the video was uploaded to Pornhub to

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Table 2. *Aggression and Pleasure As Predictors of Viewership (Negative Binomial Regression; n = 146)^a*

	1	2	3	4	5	6
Aggression						
Video title suggests aggression	-0.19 (-0.37)					
Physical aggression—Visible (%) ^b		-0.95* (-2.52)				
Physical aggression—Nonconsensual (%) ^c			-4.72** (-2.62)			
Verbal aggression				-0.36 (-1.11)		
Pleasure						
Woman displays pleasure					-0.06 (-0.16)	
Woman displays climax						0.70^ (1.81)
Controls						
Amateur video	0.22 (0.56)	0.17 (0.41)	0.21 (0.54)	0.33 (0.78)	0.21 (0.52)	0.23 (0.58)
Video duration (minutes)	-0.02 (-1.21)	-0.01 (-0.58)	-0.02 (-1.06)	-0.02 (-1.13)	-0.02 (-1.23)	-0.02 (-1.41)
Year uploaded to Web site	-0.32*** (-4.37)	-0.27*** (-3.77)	-0.29*** (-4.14)	-0.33*** (-4.50)	-0.32*** (-4.37)	-0.31*** (-4.31)

Note: ^aWe included in the analysis only the 146 videos from the all most viewed ($n = 70$) and from the random ($n = 76$) categories. We excluded the videos from the specific racial categories from this particular analysis because preliminary analyses revealed that these are both less popular and more likely to include aggressive acts. They, therefore, might skew an analysis that focuses on the relationship between aggression and video popularity.

^bDefinition not considering consent.

^cDefinition considering consent.

Unstandardized coefficients (two-tailed t tests in parentheses) ^ $p < .01$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 3. *Aggression and Pleasure As Predictors of Percent Likes (Ordinary Least Squares Regression; n = 269)*

	1	2	3	4	5	6
Aggression						
Video title suggests aggression	-0.08 (-0.07)					
Physical aggression—Visible (%) ^a		0.81 (0.97)				
Physical aggression—Nonconsensual (%) ^b			-2.81* (-2.33)			
Verbal aggression				-0.98 (-1.07)		
Pleasure						
Woman displays pleasure					2.65** (3.04)	
Woman displays climax						3.55** (3.06)
Controls						
Amateur video	-3.05* (-2.50)	-2.90* (-2.37)	-3.25** (-2.70)	-2.85* (-2.32)	-2.73* (-2.27)	-3.08* (2.58)
Video duration (minutes)	0.07* (2.08)	0.06^ (1.93)	0.08* (2.42)	0.07* (2.19)	0.06* (1.97)	0.06^ (1.93)
Number of views (millions)	0.09** (2.76)	0.09** (2.90)	0.08* (2.42)	0.09** (2.81)	0.09** (2.74)	0.07* (2.09)
Year uploaded to Web site	-0.94*** (-7.27)	-0.93*** (-7.29)	-0.95*** (-7.49)	-0.91*** (-7.01)	-0.93*** (-7.36)	-0.92*** (-7.28)
R^2	0.26	0.26	0.27	0.26	0.28	0.28

Note: ^aDefinition not considering consent.

^bDefinition considering consent.

Unstandardized coefficients (two-tailed t tests in parentheses) ^ $p < .01$; * $p < .05$; ** $p < .01$; *** $p < .001$.

detect potential temporal changes in popularity but also to account for the fact that videos uploaded at an earlier time have the potential to accumulate a larger number of views.

Coding and Analytical Strategy

Two female coders worked on this project. Both were students with good familiarity of sexually explicit materials from previous research projects. They both coded all of the videos in the sample separately and then met to compare their coding. The coders first met several times with the project leader, who trained them in the method and coding scheme. Before coding from the actual sample, each separately coded five trial videos. The research team then met to discuss the coding and resolve unclear issues. Next, the two coders continued to code together all the videos in the sample. When they encountered disagreements over the interpretation of contents, they met with the project leader; the entire research team then discussed the issues and reached a resolution. Finally, the project leader watched all of the videos and coded each independently to ascertain coding accuracy, paying special attention to the coding of aggression. Differences in coding were then resolved through discussion among the members of the research team.

Intercoder agreement between students' coding and the project leaders' coding was generally good, with 94.42% agreement for aggressive titles, 89.59% agreement for visible aggression, and 96.28% agreement for nonconsensual aggression. Kappa statistic scores for these three measures were 0.73, 0.77, and 0.81, respectively. The only measurement of aggression for which intercoder agreement was somewhat lower was the percent of the video containing aggression, with 65.67 intercoder agreement and a Kappa coefficient of 0.41, which is often considered fair or moderate. However, we should note that for this variable it is difficult to reach a high degree of agreement, as even slight variations in the recording of time (e.g., one minute and a half versus one minute and 45 seconds) generate disagreement. It is therefore important to note that when disagreements did occur they were usually fairly small, mostly within no more than five seconds difference and never more than 30 seconds difference. When such disagreements did occur, we resolved them by rewatching the video.

While previous studies have often used "scene" or "character" as their unit of analysis (Bridges et al., 2010, Cowan & Campbell, 1994, Klaassen & Peter, 2015, McKee, 2005), we chose instead to use the entire video as our unit of analysis to prevent overrepresentation for longer videos. We should note, however, that most of the videos in our sample consisted of one sex scene only. Our analyses combine descriptive statistics of time trends in aggression and regression analyses (both negative binomial and OLS, depending on the measurement of the dependent variable) to determine the effects of aggression on video popularity.

Results

Our first hypothesis, based on much of the extant literature, was that depictions of aggression in pornographic videos have increased over the years. As reported in Table 1, and similar to other recent research (Klaassen & Peter, 2015), we found that, in the overall sample (all years), visible aggression (definition not considering consent) was present in slightly less than 40% of the videos, nonconsensual aggression appeared in about 12% of the videos, and nearly 10% of the titles suggested aggression.

However, we found no evidence for a temporal increase in aggression (hypothesis 1). In Figure 1, we show the percentage of videos including one of our three measures of aggression in each year between 2008 and 2016. The graph begins in 2008 because only five videos in our sample were uploaded to Pornhub prior to this year. Our data do not provide support for hypothesis 1 over this nine-year period, as none of our three measures of aggression shows an increase over time; in fact, some of them actually show a downward trend.

First, depictions of visible aggression fluctuate but show no steady upward or downward trend. Videos depicting visible aggression mostly range from around 30% to 50% of all videos yearly (the trend for this measure was not statistically significant)² Importantly though, the average duration of visible aggression in videos shows a substantial declining trend ($p < 0.05$). In 2008, nearly 13% of the average video portrayed visible aggression. By 2016, this figure dropped to less than 3%. This finding is important, as it stresses the fact that even videos that contain aggressive acts are not *all* about aggression. In fact, many of them also portray female pleasure (not only in response to aggression), courtship, tenderness, and affection. Similarly, the rate of videos with nonconsensual aggression slightly declined over time, from about 20% of all videos at 2009 and 2010 to roughly 10% over the past three years, although this trend was not statistically significant. Finally, the prevalence of videos with titles that suggest aggression dropped significantly ($p < 0.05$) from nearly 40% of all videos in 2008 to about 5% in 2016.

Our second hypothesis, following the common view among many feminist writers on pornography, was that videos depicting aggression would be more popular than those that do not depict aggression. We first tested this hypothesis by comparing the sample of all-time most-watched videos ($n = 70$; mean n views = 23.5 million) to our random sample of videos watched no more than 100,000 times ($n = 76$; mean n views = 60,000). Our findings clearly stand in opposition to the assumption about the popularity of aggression. Table 1 shows that

² In addition to overall time trends in aggression, we also examined time trends in each of the specific measures of aggression noted previously (e.g., biting, pulling hair, hitting of the body, choking, forced gagging, spanking, and forceful penetration). We found no significant trend for any of these practices.

while only 12.9% of the videos in the most-viewed sample contained visible aggression and only 1.4% (one video) included nonconsensual aggression, in the random sample of less-watched videos, visible aggression was present in 36.8% of the videos and nonconsensual aggression in 9.2% of them (verbal aggression was also significantly more prevalent in the random sample).

We next explore our hypotheses about the relationship between aggression and popularity using regression analyses, with popularity (both number of views and percent likes) measured as a continuous variable. Tables 2 and 3 present results for the effects of aggression and of women’s pleasure responses on both the number of views and the percent of likes a video received. Once again, neither table provides support for the hypothesis that aggression is more popular. In fact, they suggest that videos depicting aggression, particularly of the nonconsensual type, are less likely to be viewed and less likely to elicit a favorable response (i.e., a “like”) from viewers. Conversely, videos where women respond with pleasure were more likely to receive greater viewership and a favorable response.

In Table 2 we present the results of a negative binomial logistic regression including the predictors of the number of views a video received. Of note, we excluded from this analysis all videos sampled through the specific racial categories ($n = 123$), because preliminary analyses reveal that these are both less popular and more likely to include aggressive acts. Their inclusion might therefore skew an analysis that focuses on the relationship between aggression and video popularity.³ We examined four measurements of aggression and two measurements of pleasure. The findings show that physical aggression, whether it was measured while considering consent (Model 3) or not (Model 2), was negatively associated with the number of views. Conversely, videos where the female performer displayed clear pleasure in the form of a climax were more likely to receive a higher number of views.

In Table 3 we present a similar analysis (using OLS), but this time with the percent of favorable viewer responses (“likes”) to a given video as the dependent variable. While here we do not find a significant coefficient for visible aggression (Model 2), we do find that videos depicting nonconsensual aggression (Model 3) were less likely to be popular, as reviewers were more likely to award them a “thumbs down.” Also consistent with the findings in Table 2, videos where female performers displayed pleasure, whether it was a climax (Model 6) or an alternative pleasure response (Model 5), were more likely to be viewed favorably and receive a “like.” Overall, then, our results suggest that the majority of viewers who choose to share their preferences favor videos that do not include aggression and where women, rather than just men, appear to enjoy the sexual act.

³ Nevertheless, we also ran robustness checks for the entire sample ($n = 269$). Results for the main variables of interest (both the measurements of aggression and the measurements of pleasure) remained in the same direction and statistical significance did not change.

Conclusion And Discussion

We examined the popular claim that Internet pornography is becoming “harder and harder” (DeKeseredy & Corsianos, 2015, DeKeseredy & Hall-Sanchez, 2017; Dines, 2010, Fradd, 2017, Halverson, 2016, Shulevitz, 2016, Sun et al., 2010, Tuohy, 2015). More specifically, we utilized a sample of 269 videos to test two hypotheses related to this claim: (1) depictions of aggression have increased over the past decade and (2) viewers respond favorably to depictions of aggression. Our analyses show no support for either of these claims. First, over the past decade, we found no increase in the number of videos depicting visual aggression. We did find a significant decrease in the average length of scenes depicting such aggression, as well as an overall downward trend in the number of videos containing nonconsensual aggression and titles that suggest aggression. Second, we found that videos containing aggression (in particular nonconsensual aggression) were less likely to be viewed than videos with no aggression and were less likely to receive favorable reviews from viewers.

Our findings may be viewed as a positive development by the large body of scholars and activists who write and speak about the pernicious effects of aggression in pornography, such as its potential links to violence against women (DeKeseredy & Hall-Sanchez, 2017) and an increased acceptance of rape myths (DeKeseredy, 2015). Indeed, it appears that at least some mainstream viewers are gradually moving away from prevalent depictions of aggression and degradation, and in particular from videos that include long sequences of such practices and from videos that depict nonconsensual aggression. This shift away from nonconsensual aggression may signify lower demand and, depending on the responsiveness of producers to consumer preferences, might result in reduced distribution of material featuring nonconsensual aggression.

We also find our results somewhat encouraging in terms of what they mean for sexuality and gender relations. Over the years, some feminist anti-porn scholars have viewed pornography per se as violence against women, an industry which fosters sexual aggression, misogyny, and rape myths (Brownmiller, 1975, Dines, 2010, Dworkin, 1989, Dworkin & MacKinnon, 1988, Russell, 2000). Some have even suggested that the pervasiveness of aggression and degradation in today’s porn industry testifies to widespread misogyny. Gail Dines, one of the most prominent anti-pornography scholars, said in an interview with *The Guardian*: “To think that so many men hate women to the degree that they can get aroused by such vile images is quite profound” (Bindel, 2010).

Our findings suggest that, in fact, Dines and similarly minded thinkers may be confusing supply—what a large portion of mainstream porn looks like—and demand—what most viewers actually want to watch. Indeed, while some viewers (both men and women) undoubtedly enjoy aggression and degradation of women and find such videos to be

arousing and gratifying, our study provides no support for the claim that the majority of viewers prefer to be exposed to such images. We suggest that future studies relying on surveys and interviews with porn viewers should focus on this point and try to assess whether most viewers indeed prefer aggression-free pornography, as at least one previous study has already suggested (Loftus, 2002)

We should further note that our findings regarding the lack of popularity for aggression hold mainly for nonconsensual aggression. This is consistent with McKee's (2005, 2015) contention that judgments about consent are at the heart of viewers' treatment of sexually explicit materials. In describing "healthy pornography," many viewers refer to consent as a key issue and find violence and nonconsensual acts unacceptable (McKee, 2006). We believe it is indeed important to make this differentiation. Acts such as ejaculation in mouth, anal penetration, and spanking—which some might find reprehensible or degrading—generally did not have an effect on viewers' popularity rankings (i.e., the percent of "likes"). Conversely, acts that were more clearly unpleasant/painful for female performers, such as forced gagging or forceful anal penetration, were ranked as less popular.

Our findings also appear to be consistent with those reported by Loftus (2002), who interviewed male pornography viewers. Most of these men stated that they did not like depictions of domination or aggression against women. The men also testified that they did not find the male performers to be suitable role models and did not want to imitate them. Finally, the interviewees also did not report gradually gravitating toward increasingly extreme contents. They did not seek ever more vivid, kinky, and violent pornography; instead, they either stuck with what they liked first, investigated harder contents but came back to those they preferred at first, or lost interest altogether.

Beyond aggression, our findings also indicate viewers' preferences for videos showing women's pleasure in pornographic videos. These findings are again consistent with those of Loftus (2002), who found it was important for his male interviewees that the female performers in the videos seemed to be enjoying themselves. The men in his study also said they much preferred it when the female performers were notably involved in the sex, rather than merely serving the interests of male performers. In accordance with these notions, the majority of the videos in our sample depicted women who were not merely passive and compliant but rather sought sex quite enthusiastically and made clear efforts to demonstrate that they desired the act and were deriving pleasure from it.

Still, one might wonder whether these are "real" displays of pleasure or merely an entirely scripted act. Some feminist writers have argued that mainstream pornography is made exclusively for men and creates a sexual world centered on men's pleasure (Fitzgerald & Grossman, 2017, Paul, 2005). Within this world, women's sexual pleasure is inconsequential, at least in its own right. That is, women's displays of pleasure are rarely (if ever) genuine; they follow a scripted

act and serve merely as a testimony of men's prowess and success in eliciting pleasure from their sexual partners, with little regard to consent (Dines, 2003). Columnist Joan Smith (2013) expressed this idea in an article in *The Independent*: "I have always tried to make a distinction between sex which was enjoyed by both parties and sex-and-violence. These days the latter predominates and the idea that most Internet porn has anything to do with women's sexual pleasure is laughable."

Our findings for the most widely watched mainstream pornography problematize and put in question such contentions. It is true that even if women perform displays of pleasure and climax, this is often scripted. Interviews with performers in the porn industry (Bauer & Gradus, 2015, Miller-Young, 2014, Wagoner, 2012) and behind-the-scenes documentations (Bauer & Gradus, 2015, Sun et al., 2010) often reveal the scripted nature of these interactions, dictating that both female and male performers (in particular the former) display ecstatic pleasure throughout the videos. Yet, following McKee (2005, 2015, 2016), we argue that when analyzing the content of videos it is important to pay attention not only to the subtext but also to the text itself. The fact that women display pleasure in the large majority of videos, and that the majority of these pleasure displays do not follow aggressive acts, sends a message that women's sexual pleasure is important after all.

Consent in pornographic videos (and in sexual interactions more generally) is rarely completely free. Indeed, consent is embedded in a larger context of gendered power relations and normative expectations regarding the role and performance of men and even more of women in the pornography industry (and in life). However, as McKee (2015) argued, it does not logically follow from this premise that consent is unimportant. Similarly, we argue that pleasure displays, even when scripted and embedded within a set of role expectations, are nevertheless meaningful. They convey a message that women's pleasure is an important part of most sexual encounters and that women are entitled, in fact expected, to experience sexual pleasure. Such expectations are, of course, not without problems of their own. Both female and male viewers may feel pressures to perform certain acts and exhibit pleasure even when their actual experiences do not conform. Still, we found no support for the notion that mainstream pornography is entirely focused on men's pleasure and completely ignores women and their real needs, desires, and entitlement to pleasure.

Limitations

Our study is marked by a few notable limitations, which we hope future studies may be able to address and improve upon. First, the time range of the videos that we analyzed here is limited to the past decade. Almost all videos that were either most watched or randomly sampled from Pornhub were within this time range, and we are therefore unable to comment on changes that have occurred prior to

this date. It is worth noting, though, that this problem is not easy to bypass. Because videos from earlier years seldom come up when using either random or “most watched” sampling methods, one would have to adopt purposive sampling techniques (e.g., search by year in the title) to collect more of them. Such sampling, however, runs the risk of capturing a sample of videos that were more likely to be preserved and uploaded to Pornhub, for whatever reason, and thus may not be representative of the more general population of videos from these years. For example, it is possible that those videos containing less bizarre scripts and occurrences or those containing relatively less aggression were also those more likely to be eventually uploaded to the Web. As such, an attempt to assess time trends in aggression using two diverging sampling techniques may prove misleading.

A second issue in our analysis has to do with sample size, in particular as it pertains to establishing time trends. While we were able to reach a sample of at least 25 videos for each of the nine years in our sample, this number might not provide sufficient statistical power to confidently determine time trends. However, it is important to note that even with this relatively lower statistical power, we were still able to find a significant downward trend for two of the measures presented in Figure 1: titles and average duration of aggression. Furthermore, all four measures we present in Figure 1 show a trend that is in the opposite direction to that predicted by our first research hypothesis. As such, even if we were to significantly increase our sample, it appears unlikely that such an augmented sample would provide support for hypothesis 1.

Third, we acknowledge the possibility that while some categories of mainstream pornography may not see an increasing rise in violence, others—particularly those featuring group sex or multiple men with a single woman (e.g., “gang-bang” scenes) might. We would have likely found more aggression if we conducted a purposive sample on categories like “double penetration” or “bukkake,” but we saw no good justification to target these specific categories when our main purpose was to focus on the most watched content. This said, only about 1% ($n = 3$) of the videos captured by our sampling strategy (i.e., finding mainstream content by using the “most viewed all time” and the “random” filters) featured more than two individuals. The decision to exclude these videos from our present analysis was partly based on this very small number and partly on the difficulty to code group interactions in a manner analogous to coding dyadic sexual interactions. We could have over-sampled on categories like gangbangs to increase the number of such multiple-partner videos, but doing this would have violated the guiding principle behind our sampling strategy: trying to reach videos that are either mainstream (i.e., highly viewed) or randomly sampled.

Another limitation, which this study shares with many others on aggression in pornographic videos, is that of adequate measurements. Our strategy in this article was to try to examine a wider set of alternative measurements for

both popularity (which we measured with either number of views or percentage of likes) and aggression (for which we adopted five distinct measures). Still, as we also note in our description of the measurements, these operationalizations remain imperfect. In particular, our two measurements for popularity suffer from some shortcomings. First, as noted, the number of views for a video may be influenced not only by its actual content but rather by factors such as prominence given to it by the porn Web site, as well as its title, tags, and thumbnails. The latter three features (particularly the title and tags) may be only partly correlated with the actual content of the video and, at times, may even be entirely unrepresentative of the contents.

Our second measure for popularity (percentage of likes) appears to have greater validity. Still, this measurement is based on a subsample of the actual viewers of each video, as most viewers do not rate content. This subsample may be different in various qualities (that we cannot assess) from the larger population of viewers, and therefore the ratings should be treated with some caution. The figures for percent likes (as well as those for number of views) may further be susceptible to intentional manipulation by the owners and operators of pornographic videos. However, we conducted short interviews with past and present employees of Pornhub, who reassured us that this is not a concern for the owners and that the operators and programmers of the Web site do not habitually manipulate these figures. Furthermore, even if that were the case (i.e., that Web sites would manipulate figures), we see no clear reason why this practice should coincide with certain contents (e.g., deliberately altering figures downward for more aggressive videos).

In conclusion, we see this study as a first attempt to systematically assess the various claims in the literature about online free pornographic content and the direction in which mainstream consumer preferences may be moving. As noted in this Limitations section, this analysis suffers from several imperfections, in particular ones related to the time span that we were able to evaluate and the validity of measures for video popularity. Given these shortcomings, the findings of our study should be treated with some caution, and we suggest that future research should further explore these issues through the use of complementary methods, in particular, surveys and interviews.

Ethics Statement

Because we are analyzing the content of freely available online materials, no ethics approval was required.

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EXHIBIT 20

The Development and Deployment of the Idea of Pornography Addiction Within American Evangelicalism

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ABSTRACT

Based on an archival analysis of the popular evangelical magazine *Christianity Today*, I trace the story of evangelical thinking about pornography during the course of the magazine's history from 1956 to 2014. I show how evangelicals have developed and deployed the idea of pornography addiction, and in doing so, have communicated messages about pornography that have made it more likely for evangelicals to perceive themselves as being addicted to pornography. I investigate the motivations behind these messages, and suggest that these messages may, in fact, tell us less about individual pornography users and more about those who are developing and deploying such messages.

Introduction

Over the last 30 years, Americans have increasingly embraced the idea of sexual addiction (Irvine, 1993, 1995, Reay, Attwood, & Gooder, 2013) and especially that of pornography addiction (Ley, Prause, & Finn, 2014, Voros, 2009). Although there is substantial academic disagreement about what constitute these addictions (Giugliano, 2009, Hall, 2014, Karila et al., 2014, Moser, 2013) or whether these addictions even really exist (Kor, Fogel, Reid, & Potenza, 2013, Ley et al., 2014, Prause & Fong, 2015, Prause, Steele, Staley, Sabatinelli, & Hajcak, 2015), the popular use of these ideas has become increasingly widespread (Reay et al., 2013).

For pornography addiction in particular, this is perhaps nowhere more true than among religious persons (Davies, 2003, Ferree, 2002, King, 2003, Laaser & Gregoire, 2003, Nelson, 2003, White & Kimball, 2009) and especially conservative religious persons (Abell, Steenbergh, & Boivin, 2006, Edger, 2009, 2012, Kwee, Dominguez, & Ferrell, 2007, Levert, 2007). For example, research has found that persons with high levels of religiosity or with conservative religious values are more likely than others to perceive themselves as being addicted to pornography (Abell et al., 2006, Grubbs,

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Sessoms, Wheeler, & Volk, 2010, Kwee et al., 2007), even when controlling for actual pornography use (Grubbs, Exline, Pargament, Hook, & Carlisle, 2015). Similarly, research has found that marriage and family therapists with high levels of religiosity are more likely than their less religious counterparts to perceive their clients as being addicted to pornography (Hecker, Trepper, Wetchler, & Fontaine, 1995). Along with these individual findings, recent research has also documented how conservative religious groups have increasingly embraced the idea of pornography addiction. For instance, Mormons have repeatedly raised concerns about pornography addiction within their official church documents (Sumerau & Cragun, 2015a, 2015b), while evangelicals have increasingly used the language of pornography addiction within their popular magazine *Christianity Today* (Thomas, 2013).

Explaining perceptions of pornography addiction

Despite the fact that religiosity and conservative religious values are related to perceptions of pornography addiction, there have only been a handful of attempts at explaining this relationship (Grubbs, Exline et al., 2015). These attempts have generally taken one of two approaches. On the one hand, some have argued that the reason religious persons, and especially conservative religious persons, are more likely to perceive themselves as being addicted to pornography is because they actually are. The idea here is that there is something about being a religious person, and especially a conservative religious person, that makes one prone to pornography addiction. These arguments typically begin with the claim that the upbringing and socialization of such persons often takes place within “rigid, authoritarian families” (Levert, 2007, p. 150) where sex is either “taboo” (White & Kimball, 2009, p. 350) or where a “fear of sex” (Nelson, 2003, p. 187) is produced by an overwhelming focus on “sexual purity” (Edger, 2012, p. 163). As one article put it, these conditions produce “vulnerabilities” that lead to “a unique susceptibility to developing a compulsion or addiction to internet pornography” (White & Kimball, 2009, p. 350). If such persons then use pornography, they are more likely to get caught up in “cycles of shame and guilt” (p. 353), which can lead to “cognitive dissonance” (Nelson, Padilla-Walker, & Carroll, 2010, p. 136), “compartmentalized and inconsistent thinking” (Levert, 2007, p. 148), and, ultimately, pornography addiction.

On the other hand, some have argued that although religious upbringing and socialization can indeed affect one’s relationship with pornography, in general, the effect is not such that one becomes prone to pornography addiction but rather that one becomes prone to perceiving oneself as being addicted, even if one’s actual pornography use is otherwise unproblematic (see Grubbs, Volk, Exline, & Pargament, 2015). The idea here is that religious persons, and especially conservative religious persons, often respond to the shame and guilt of their pornography use by pathologizing what is essentially a normal behavior (Clarkson & Kopaczewski, 2013, Grubbs, Exline et al., 2015, Grubbs et al., 2010, Kwee et al., 2007, Ley et al.,

2014) Additionally, while such persons may indeed experience “cognitive dissonance” or “compartmentalized and inconsistent thinking,” these conditions are not the causes of pornography addiction but rather the effects of perceiving one’s pornography use as “physiologically” addictive and thus outside the domain of volitional control (Clarkson & Kopaczewski, 2013, p. 128). Accordingly, one of the key arguments here is that religious persons, and especially conservative religious persons, are motivated to embrace the idea of pornography addiction specifically because it helps relieve them of moral responsibility for their pornography use, thus mitigating the shame and guilt that they feel.

From psychological processes to sociological contexts

Of these two different approaches to explaining perceptions of pornography addiction, the latter is more consistent with the empirical evidence (Grubbs, Exline et al., 2015). Yet, that being said, the psychological processes at work within this explanation are still largely speculative. While religious persons, and especially conservative religious persons, may indeed be mistaken in their perceptions of pornography addiction, there is little data that actually illuminates why.

In this article, then, I attempt to partially address this situation. However, instead of focusing on the psychological processes of individual religious persons, I suggest that a more productive investigation could take place through focusing on the sociological contexts of the religious groups of which these individuals are a part. Hence, I propose that if we really want to know why religious persons, and especially conservative religious persons, are more likely than others to perceive themselves as being addicted to pornography, we should investigate how these persons’ ideas about pornography have almost certainly been shaped by the messages that they have heard in their churches and local religious communities.

While there are undoubtedly many ways to undertake such an investigation, in this article, I investigate these issues through examining the story of modern pornography from the perspective of American evangelicals, one of the key religious groups that have often been cited as being especially likely to embrace the idea of pornography addiction (Abell et al., 2006, Edger, 2009, 2012, Kwee et al., 2007, Thomas, 2013). In particular, I conduct an archival analysis of the popular evangelical magazine *Christianity Today*. In doing so, I trace the story of evangelical thinking about pornography during the course of the magazine’s history from 1956 to 2014, which matches up well with the broader story of the emergence and proliferation of modern pornography. In the text ahead, I first offer some additional background on *Christianity Today* before providing a succinct telling of this story. Afterwards, I identify three main themes, and I discuss how these themes can help illuminate why religious persons, and especially conservative religious persons, are more likely than others to perceive themselves as being addicted to pornography. Finally, I conclude by considering the implications of this study for both clinicians and researchers.

The story of evangelical thinking about pornography

Data and methods

In order to tell the story of evangelical thinking about pornography, I build on several earlier studies of mine in which I investigated evangelical perspectives on sexuality using archival analysis of the popular evangelical magazine *Christianity Today* (Thomas, 2013, Thomas & Olson, 2012, Thomas & Whitehead, 2015). *Christianity Today* is widely considered the flagship publication of American evangelicalism (Dowland, 2009, Lindsay, 2007, Marsden, 2006, Smith, 1998), and as I have argued in detail before (Thomas & Olson, 2012), it is well established that the magazine has consistently represented and exemplified the thinking of mainstream evangelical elites as well as had a direct and critical influence on the course of the modern evangelical movement. Accordingly, the messages about pornography seen within *Christianity Today* should provide critical insight into the kinds of messages that evangelicals have likely heard in their churches and local religious communities.

For the purpose of this particular study, I extend the methodology and data collection of a recent study of mine (Thomas, 2013), in which I used the American Theological Library Association's Religion Database to identify 82 *Christianity Today* articles that addressed the topic of pornography between 1956 and 2011. I have now updated this dataset to include 2 additional articles about pornography that appeared within the magazine between 2012 and 2014. Working with these 84 articles, I used an inductive approach in order to code and refine what I ultimately distilled into three main themes that I suggest are at the core of evangelicals' thinking about pornography. Following, then, in the lines of the interpretivist sociological tradition (e.g., Weber, 1978, see Hitzler, 2005), I frame and present these themes in order to explain a series of progressions in the logic and meaning of evangelicals' thinking about pornography. Before doing so, though, I think it is important to contextualize these themes in terms of the historical events and situations from which they emerged. Accordingly, I now tell the story of evangelical thinking about pornography through the use of a narrative approach (Berger & Quinney, 2005, Riessman, 2008), which I illustrate with quotations from *Christianity Today*.

Findings

The story of evangelical thinking about pornography is largely a story of indignation and frustration as evangelicals have variously reacted, strategized, and responded to the changes taking place around them. Along these lines, the story begins in *Christianity Today* with a 1958 article reacting to the growing availability of pornography at the newsstand. Concerned that evangelicals might have little awareness of the kinds of "sexual perversion" being peddled, the writers denounced the "depravity" that they had found:

It is difficult to stay within the bounds of good taste and convey to the decent citizen who rarely peruses such periodicals and almost never reads the stories, the extent of the

depravity to which they have sunk. The current February issue of *Playboy* which can be obtained from almost any newsstand can serve as a typical example. The language of the gutter is flaunted with a sneer and detailed descriptions of the most sordid acts of fornication are given on almost every page. (Cannon & Everett, 1958, p 6)

Through the end of the 1950s and throughout the 1960s, other writers took a similar tone, regularly urging evangelicals to respond to the cultural degradation that was being forced upon them by the “deviates” of American society (Everett, 1966, p 45). However, by the 1970s, American perspectives on pornography were rapidly changing, and *Christianity Today* writers began to perceive the problem of pornography as not just a blemish on the otherwise wholesome character of society but as growing evidence of the wholesale corruption of popular culture. One frequently mentioned sign of this was the proliferation of adult movie theaters across the country. Writers reacted in bewilderment and dismay:

Millions of Americans today are peeling off five dollars for the dubious privilege of being voyeurs of kinky sex acts. Porno film-makers are reaping great profits because many people in our permissive social milieu want their cinema sinful.

To state that this pursuit of vicarious sexual titillation via skin flicks shows juvenile curiosity or degraded appetites and the increasing vacuity of our skidding society is to assert the obvious. Surely no one who appreciates the joy of sex as God intended it—within the context of married love—can find current sex films anything but immoral and empty exhibitionism. (Cleath, 1975, p 21)

As the 1970s continued, *Christianity Today* writers began to emphasize two themes in response to the growing acceptance of pornography. On the one hand, the 1970s saw a strengthening sense of evangelical urgency surrounding the need to fight the problem of pornography through all means possible. Hence, writers regularly detailed and debated various plans and strategies, and readers were regularly called to action:

... a battle strategy... should (1) form groups, (2) write letters of protest, (3) organize boycotts of stores selling pornography, and (4) once success is attained, keep a sharp eye out for pornography's return. (Welch, 1974, p 37)

On the other hand, the 1970s also saw a growing realization that pornography was not just a problem of the godlessness of popular culture but was also a potential threat to the sexual purity of evangelicals themselves. Increasingly, moral indignation became accompanied by recognition of the allure and temptation of pornography:

Pornography prospers because sinners want it. But it is also true that its ready availability may induce sinful sexual indulgence not otherwise stimulated. Christians need to understand the nature of this socially degrading entertainment and use legal means to close it down. (Cleath, 1975, p 22)

By the early 1980s, both of these themes were receiving extensive attention. Not only were there frequent reports and discussions regarding the various up and

downs of fighting pornography at the local, state, and federal levels, but there were also mounting concerns about the infiltration of pornography use within evangelicalism itself. In large part, these concerns were driven by a series of technological developments that were dramatically increasing the availability of pornography. In particular, the developments of cable television and video cassette players were quickly moving pornography out of the theater and into the living room:

Recent news reports indicate that videotape cassettes featuring both soft- and hard-core pornography are selling like hot cakes in some of our larger cities. Along with cable TV pornographic offerings, the spectacular growth of this field foreshadows America's future if we let it happen. We could become a nation of vicarious voyeurs, with growing numbers of men huddled around TV sets after 11:30 p.m. watching performers engaging in every form of explicit sexual behavior that commercial human ingenuity can invent. How could one evaluate this scene as anything but evidence of a decadent culture? (Christenson, 1981, p 22)

Alongside this escalation in availability, writers were also becoming more and more shocked by what they saw as a corresponding escalation in the explicitness, “raunchiness,” and “aberrational” (Christenson, 1981, p 22) character of pornography:

[There is widespread] ignorance of how vicious pornography has become. It bears little relation to the “naughty magazines” of the last generation with their skimpily clad or bare-breasted models. Today it is thousands of magazines, quickie films, and videotapes with close-ups of nothing but promiscuity, group sex, bestiality, masturbation, rape, sado-masochism, gang sexual assault, and fetishes. Even sex murders actually have been committed on film. (Genet, 1982, p 52)

It was this combination, then, of availability and explicitness that formed the context out of which *Christianity Today's* very first mention of the idea of pornography addiction emerged. Reporting on the new field of sexual addiction studies, a 1982 article explained:

Victor Cline, a Salt Lake City psychologist and expert in the field, told the conference that pornography has an addicting effect, that it requires escalation (over a period of time, the consumer needs increasingly rough material), that it desensitizes (making one immune to that which originally shocked), and that there is a strong tendency for its user to act out what they have seen. (Genet, 1982, p 52)

By the mid-1980s, numerous other articles were also developing and deploying the idea of pornography addiction. According to such articles, not only did pornography addiction “endanger society” (Kantzer, 1986, p 18), but it also presented a particularly insidious problem for those evangelicals who might be inclined to underestimate its danger. Indeed, while among evangelicals, teenagers and young people were initially assumed to be most at risk, *Christianity Today* writers rapidly expanded their concerns to include evangelical men of all ages. Particularly troublesome was the possibility that one might accidentally come upon soft-core pornography—for instance, late at night on cable television—and then inadvertently

become trapped in a cycle of addiction that necessitated ever-increasing amounts of hard-core material:

Evidence is presented to depict pornography as addictive—forcing the consumer to require greater quantities of more intense material to maintain a level of gratification. Many move from “soft” pornography to the violent and explicit “hard” pornography being made more accessible by the television and film industries... (Cromartie, 1985, p 48)

With this backdrop in mind, some *Christianity Today* writers even went so far as to promote the idea that once trapped in pornography, many if not most persons would need professional help in order to break free:

... it is extremely difficult for a person to stop a pornography habit. “Most people relapse after therapy”... “The best therapy is an ongoing program similar to Alcoholics Anonymous.” (Cryderman, 1988, p 43)

Although these and similar kinds of messages about pornography continued to be expressed through the end of the 1980s, in an unexpected twist, the early 1990s brought a brief respite to the frustration that many *Christianity Today* writers had long experienced. In particular, there was an approximately three- or four-year period during which a series of victories against pornography led several writers to voice what would later be seen as fleeting and unwarranted optimism. Nonetheless, while it lasted, these writers took a more positive tone:

... opponents of obscenity and child pornography meeting in Washington, D.C., last month took encouragement on several fronts. President Bush and top administration officials pledged strong government action against illegal pornography. Grassroots groups from around the country reported creative and effective efforts on a community level... And new battle plans were drawn to expand the scope of the fight. All this leads anti-pornography activists to the optimistic belief that a new momentum is building...

“We believe we’re seeing the team grow up across America that’s going to win this effort..” (Lawton, 1991, p 42)

However, such optimism was indeed short lived. By 1994, an eight-page *Christianity Today* feature article proclaimed the headline, “‘Cyberporn’ Invades the American Home” (Zipperer, 1994), and as the Internet continued to develop in the mid-1990s, writers quickly abandoned any hope that pornography would be going away any time soon. Instead, by the year 2000, the frustration of earlier decades had returned full force:

The Internet and cable television have brought the retailing of pornography to the family room. We once lobbied zoning boards to shut down the seedy “adult” bookstore wedged between the convenience store and the Laundromat. Now the adult bookstore inhabits an electronic territory no zoning board can regulate. Christians once pressured the entertainment industry to keep sleaze out of prime time and corporations like 7-Eleven to keep it out of our neighborhoods. But now sleaze is sold by small-cap entrepreneurs who are invulnerable to boycotts and bad publicity....

As pornography is increasingly targeted to the private spaces we share with our personal computers, the battle must shift from retailer to consumer and employ a new Christian strategy: an emphasis on ministry to those who are enticed and entrapped by this newest version of “the lust of the eye.” (We’ve got porn, 2000, p. 32)

As the 2000s emerged, one of the key results of this focus on “the lust of the eye” was that now more than ever, the war on pornography had shifted from being a fight against the production and distribution of pornography to being a fight against pornography use itself. This led to two alternative conceptualizations of the problem of pornography use. On the one hand, in the early 2000s, a minority view conceptualized the problem of pornography use primarily in terms of the idea of sin. If a pornography user would simply accept “the healing power of grace,” his or her “sin-sick soul” could be freed from the “bondage of sin” (We’ve got porn, 2000, p. 33). On the other hand, as the 2000s continued, a majority view made it clear that the problem of pornography use could never be fully or properly conceptualized in terms of the idea of sin alone, but only in combination with the idea of pornography addiction. Yet, even so, while it seems likely that if pressed, many *Christianity Today* writers would have claimed to support both ideas, in practice, by the mid-2000s, writers had almost completely transformed the problem of the “sin-sick-soul” into the problem of “the addict [who] can never hate the sin or himself enough to stop” (Kennedy, 2008, p. 30).

In connection, then, with this latter conceptualization, and in implicit justification of it, *Christianity Today* writers began to increasingly rely on physiological explanations of pornography addiction:

Addiction assumes that the brain becomes neurochemically dependent (tolerant) and will therefore crave activities, such as looking at pornography, that elevate those neurochemicals. This explanation gives scientific credibility to why “just looking” at pornography can never be done without consequences. It suggests that Internet porn is the crack cocaine of sexual addiction. (Laaser, 2010, p. 61)

In turn, and whether intentional or not, such explanations went a long way toward undermining and devaluing the idea of volition:

... an addict’s brain doesn’t discern whether his sexual behavior is moral or immoral [rather] an addict deceives himself by thinking he can control his improper behavior. . . . One may begin by repeatedly making a sexual choice that turns into an addiction. Then, “as an addiction, it can grab onto a person and rob him of his volition” . . . (Kennedy, 2008, pp. 30–31)

Over the last several years, and into the current decade, these and similar messages about pornography have continued. Looking back, then, one of the ways to summarize the story of evangelical thinking about pornography is to observe that, in many ways, *Christianity Today* writers have been on a journey through the often-cited and popularly-used “five stages of grief” (Kübler-Ross, 2014). The denial and anger of earlier years has, over the last couple of decades, been transformed by a bargaining and depression process, and now through the idea of pornography addiction, it seems that many *Christianity Today* writers have arrived at an inevitable—if perhaps unfortunate—sense

of acceptance. While writers continue to emphasize that pornography use is a potential problem for everyone, not only including teenagers, young people, and men of all ages, but also including evangelical clergy (Gardner, 2001) and women (Beatty, 2010), the good news though—if one wants to call it that—is that because pornography addiction is a “biological disease” (Kennedy, 2008, p. 31), it is also a condition for which one can receive effective “treatment” (p. 31) and from which one can ultimately “recover” (Laaser, 2010, p. 61).

Themes

Based on these findings from *Christianity Today*, three main themes emerge from the story of evangelical thinking about pornography. First, these findings suggest that evangelicals have long perceived technological developments as leading both to an increase in pornography use as well as an increase in the addictive character of pornography. In particular, technological developments have systematically moved pornography from the newsstand to the adult movie theater, then later to cable television and video cassette players, and finally to the Internet. In turn, these developments have increased the anonymity, accessibility, and affordability of pornography (Cooper, Delmonico, & Burg, 2000) and thus dramatically increased pornography use (Döring, 2009). At the same time, these developments have also increased the explicitness of pornography (Bogaert, Turkovich, & Hafer, 1993, Bridges, Wosnitzer, Scharrer, Sun, & Liberman, 2010) and thus, at least from the perspective of evangelicals, also increased the addictive character of pornography.

Second, these findings suggest that corresponding to these perceived increases, evangelicals have systematically shifted in their thinking about who pornography use is a problem for. In the 1950s and 1960s, pornography use was primarily perceived as a problem for the “deviates” of American society. By the 1970s, though, pornography use was increasingly being perceived as a problem for culture and society more generally, and by the 1980s, pornography use was clearly being perceived as having infiltrated evangelicalism itself. While among evangelicals, teenagers and young people were initially assumed to be most at risk, concerns about pornography use rapidly expanded to include evangelical men of all ages. By the 2000s, pornography use had come to be perceived as a problem for everyone, including evangelical clergy and women.

Third, these findings suggest that alongside these shifts in thinking about who pornography use is a problem for, there have also been parallel shifts in how evangelicals have conceptualized the problem of pornography use. While in the 1950s and 1960s, pornography use was primarily conceptualized as a problem of deviance, by the 1970s, pornography use began to be conceptualized as a problem of temptation and sin. Beginning, then, in the 1980s and eventually culminating in the 2000s and continuing to the present day, pornography use has become conceptualized almost exclusively as a problem of addiction. Matching these shifts, pornography use has changed from being a deviant activity that one could avoid by staying away from the seedy and disreputable parts of town, to being a sinful

choice that one could resist through prayer and grace, to being a “biological disease” that one could treat and recover from.

Discussion

So, how do these themes help illuminate why it is that religious persons, and especially conservative religious persons, are more likely than others to perceive themselves as being addicted to pornography? Based on these findings from *Christianity Today*, I propose three answers that although directly applicable to evangelicals, are likely relevant to a range of other conservative religious groups (see Sumerau & Cragun, 2015b)

First, the messages about pornography seen within *Christianity Today* provide substantial insight into the kinds of messages about pornography that evangelicals have likely heard in their churches and local religious communities. Consistent, then, with the well-established finding that the messages of religious leaders influence the thinking of religious adherents (e.g., Djupe & Gilbert, 2002, 2003, Guth, Green, Smidt, Kellstedt, & Poloma, 1997), these messages have almost certainly shaped evangelicals’ thinking about pornography. In particular, as evangelicals have been increasingly exposed to the idea of pornography addiction, the idea has likely become increasingly salient and deployable in their minds. Hence, it seems reasonable to assume that if evangelicals use pornography, they are more likely than others to perceive themselves as being addicted.

Second, in returning to the two different approaches to explaining perceptions of pornography addiction that were discussed at the beginning of this article, it is important to recognize that although the findings from this study do not provide a definitive assessment of either approach, they are nonetheless quite suggestive. In particular, the story of evangelical thinking about pornography is consistent with the argument that religious persons, and especially conservative religious persons, are motivated to embrace the idea of pornography addiction specifically because it helps relieve them of moral responsibility for their pornography use. Support for this argument can be seen in the fact that among evangelicals, the development and deployment of the idea of pornography addiction directly paralleled evangelicals’ growing concern that pornography use was increasing among them. The timing of this shift is significant because it suggests that the idea of sin was increasingly being perceived as an inadequate explanation for why so many evangelicals were using pornography. In other words, the notion that evangelicals might simply choose to collectively increase their engagement in sexual sin was largely incomprehensible. Rather, something else had to be at work, and the idea of pornography addiction offered just such an explanation.

Third, this emphasis on the sociological contexts of evangelicals’ thinking about pornography suggests a critical observation: Although religious persons, and especially conservative religious persons, may indeed be motivated to embrace the idea of pornography addiction specifically because it helps relieve them of moral responsibility for *their* pornography use, it may be that the more important

motivation belongs to religious leaders, and especially conservative religious leaders, who may be motivated to embrace the idea of pornography addiction specifically because it helps relieve them of moral responsibility for their *adherents'* pornography use. For example, in the case of evangelicals, one can easily imagine pastors and denominational leaders being less inclined to interpret the rise in evangelical pornography use as a failure of their moral guidance and instruction, and more inclined to interpret the rise in evangelical pornography use as the outcome of a "biological disease" beyond their control.

Conclusion

I suggest, then, that this study has important implications for both clinicians and researchers. For clinicians, one of the key takeaways is the necessity of paying attention to how clients' religious backgrounds and/or current religious environments may affect not only their pornography use but also their perceptions of such use. Thus, when religious clients present with concerns about pornography addiction, it is essential to investigate how these clients' religiously informed beliefs about pornography and pornography addiction likely frame as well as interact with their actual pornography use. Following from this, clinicians should strive to separate the idea of pornography addiction from considerations of shame and guilt that may arise out of religious contexts independently of addiction processes. Moreover, it is important for clinicians to understand that some religious clients may, in fact, be predisposed to interpret their pornography use as addiction rather than face the potentially more difficult interpretation of perceiving their pornography use as sin or moral failure.

For researchers, the primary insight to be gained from this study is the overarching need to investigate the idea of pornography addiction not only in terms of individual psychological processes but also in terms of collective sociological contexts. While in one sense, pornography addiction is clearly perceived and/or experienced at the individual level, these perspectives and experiences are not necessarily of the individual's own creation but are often the product of forces operating at broader levels. Thus, it is important for researchers to investigate the messages about pornography that are being developed and deployed at these broader levels, and, in turn, it is critical that researchers investigate the motivations behind these messages. Whether these messages come from clergy, clinicians, or even other researchers, it is worth remembering that these messages may be the product of specific motivations and may, in fact, tell us less about individual pornography users and more about those who are developing and deploying such messages.

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